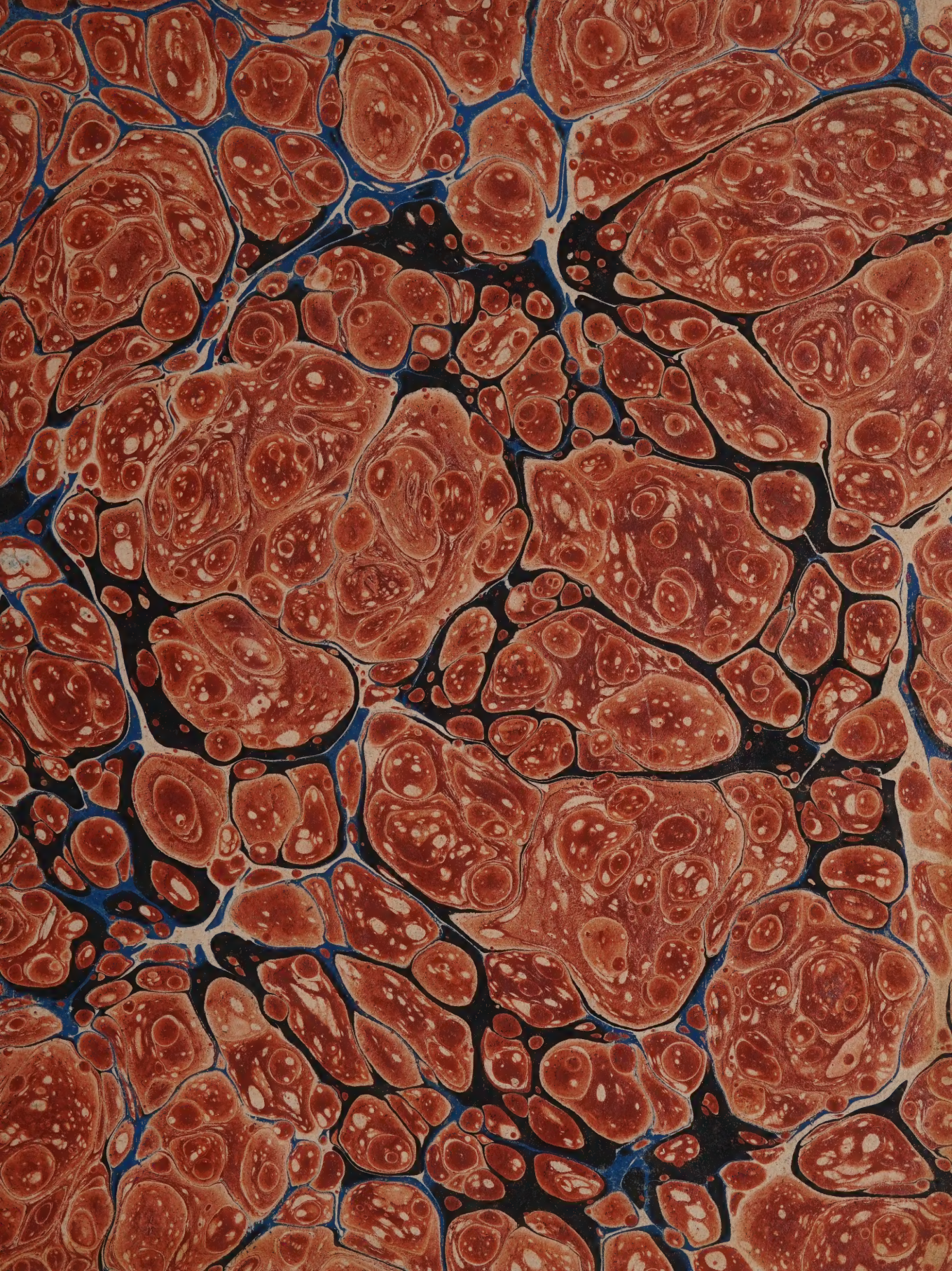

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ON

VACCINE INOCULATION.

BY

ROBERT WILLAN, M. D. F. A. S.

PHYSICIAN EXTRAORDINARY TO THE FEVER INSTITUTION, AND TO THE PUBLIC DISPENSARY, IN LONDON.

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TO THE

Right Honourable LORD HENRY PETTY,

CHANCELLOR OF THE EXCHEQUER, &c. &c. &c.

My Lord,

I am induced by motives of personal respect to address to you the following Treatise, being well assured, from a knowledge of your Lordship's disposition, that whatever concerns the happiness of mankind, will claim your attention and interest your feelings.

In the character of a statesman, my Lord, you cannot regard, with indifference, a plan calculated to increase the population of the United Kingdom, by preserving, annually, the lives of more than 40,000 persons. Your Lordship is, however, better able than I am to estimate the political advantages which would result from general Vaccine Inoculation; but I apprehend

apprehend, you will find it both useful and agreeable to learn the actual state of the practice, at this time, from professional men in the metropolis, and in different parts of the country.

I have endeavoured, in the present Publication, to rectify some mistakes made by the first Inoculators, to remove several misconceptions, and to render the practice of Vaccination, more accurate and more secure. Whether these endeavours are likely to prove beneficial or not, I must leave to the determination of your Lordship, and to that of the Publick.

I have the honour to be, with real respect,

Your Lordship's devoted Servant,

ROBERT WILLAN.

Bloomsbury Square,
22d July, 1806.

ON

VACCINE INOCULATION.

THE following treatise, composed from minutes made in the course of the last five years, is intended to exhibit the result of a laborious investigation, without reference to controversies.---Though not an Inoculator, I have had sufficient opportunities of observing the progress and effects of Vaccination, and not being a partisan, I hope, in writing on the subject, that my conclusions will appear to be unbiassed by interest or prejudice. The remarks I have to offer may be of little importance to professed Inoculators, but, I trust, they will prove useful to the majority of medical practitioners, and meet with attention from others, the safety of whose families depends on the efficacy of Vaccine Inoculation.

DEFINITIONS.

I. Scab; a hard substance covering superficial ulcerations, and formed by a concretion of the fluid discharged from them.

II. Papula; a minute and acuminated elevation of the cuticle, with an inflamed base, very seldom containing a fluid, or suppurating.

III. Tubercle; a small, hard, superficial tumor, circumscribed and permanent, or proceeding very slowly to suppuration.

IV. Vesicle; a small orbicular elevation of the cuticle, containing lymph, which is sometimes clear and colourless, but often opaque and whitish, or pearl-coloured.

V. Bleb; a large portion of the cuticle detached from the skin by the interposition of a transparent watery fluid.

VI. Pustule; an elevation of the cuticle, with an inflamed base, containing pus.

*** By Failure in the Inoculated Cow-pox, I mean to express an imperfect and insufficient Vaccination.

VACCINE INOCULATION.

§ I. ON THE COMBINED INOCULATION OF THE VARIOLOUS AND VACCINE FLUIDS.

A SERIES of observations and experiments, made during the years 1799 and 1800, enabled me to account for the frequent occurrence of pustules after Vaccine Inoculation, as first conducted by Dr. Woodville, and for some other appearances at that time thought anomalous. In a report on this subject published at the end of the year 1800*, I stated,

1. That when a person was inoculated with Vaccine and Variolous matter about the same time, both inoculations proved effective; for the Vaccine Vesicle proceeded to its acmè in the usual number of days, and the maturation of the Variolous Pustule was attended with a pustular eruption on the skin.

* On Diseases in London, page 316.

2. That these effects took place, without much variation, in all cases where the interval between the two inoculations did not exceed a week; but

3. That when Variolous matter was inserted on the 9th day after the Vaccine Inoculation, its action seemed to be wholly precluded.

The following question was subjoined: Do the Variolous and Vaccine virus, under the circumstances mentioned, act independently, or do they controul each other's operation? The answer can now be given from many collateral authorities, which confirm my own extended experience:---The Variolous and Vaccine fluids, inoculated about the same time, do restrain the action of each other on the human body, so that, in some cases, the Vaccine Vesicle is smaller than usual and has a very slow progress, in other cases, the areola is scarcely perceptible*, while, in others, it is large but premature,--and the Variolous eruption consists

*The Variolous Pustule, at the place inoculated, has often a very slight areola, and is less extensive than usual: See PL. I. No. 1. The Inoculation with Variolous matter at A preceded by five days the Vaccine Inoculation at *a*. Nancy Roberts, the child inoculated, had fever for three days, with no more than two or three small secondary pustules. In the case of Variolous and Vaccine Inoculation B, b, likewise at an interval of five days, an eruption of distinct Small-pox appeared on the fourth day after Vaccination, so that the child (Eliz. Hawkes) had probably received infection before she was inoculated with Variolous matter.—Jane Hawkes was inoculated in the same manner as her sister, but she entirely destroyed the Variolous Pustule on the seventh day.

C represents

consists of hard distinct shining pustules, which have but little inflammation round them, and which seldom maturate*. Some of these pustules are tuberculated (DEF. III.), having the appearance and size represented PL. I. No. 2. A. A. The small quantity of matter contained in them soon disappears, leaving the cuticle, which confined it, horny and elevated for many days afterward. The rest of the eruption is minute and papulous (DEF. II.), B. B. not suppurating, but desquamating.

I was fully satisfied that the pustules produced under these circumstances were genuine Variolous Pustules, as many opportunities occurred to me of ascertaining by inoculations from them, that they were capable of communicating every species of Small-pox, from the mild and distinct to the confluent and most dangerous form

C represents the Vaccine Vesicle as it appeared on the 10th day. This child had a violent fever for three days, after which, three hard pustules appeared on the face, and about the same number on other parts of the body.

When Vaccine Inocnlation precedes the Variolous, there are considerable variations in the form of the areolæ, of the pustules, and vesicles, according to the interval between the two inoculations.—When the Variolous and Vaccine fluids are inserted into the same person, on the same day, the Variolous Fever is produced at the usual time, but often without any eruption.

* Pustules of this kind appear occasionally both in the natural and inoculated Small-pox: they are denominated Variolæ verrucosæ by medical writers, but vulgarly Stone-pock or Horn-pock. "Verrucosæ dicuntur, in quibus nullus humor pustulis illabitur; ipsæ verò indurescunt, et Verrucis simillimæ extrà cutem extant, et prominent. Hæ autem ad discretum morbi genus pertinent." Mead, De Variolis & Morbillis, page 21.

of

of the disease. Dr. Woodville, who considered them to be secondary Vaccine Pustules or Vesicles*, often inoculated from them, and transmitted the matter to several of his friends: we may hence, perhaps, account for the appearance of pustules, on persons supposed to have been properly vaccinated, in different parts of the country†. I must, however, observe, that fluid taken from the Vaccine Vesicle on the arm of a person affected with the Variolous fever and eruption, and inserted into the arm of another person by a clean lancet, produced the Vaccine disease alone‡. Numerous experiments assured me

* See Woodville's first "Series of Inoculations of the Variolæ Vaccinæ." page 152-3.

He allows, however, that the eruptive disease was capable of infecting persons susceptible "in the same manner as the Small-pox;" and he remarks that "the Pustule at the place of inoculation resembled the Variolous." Page 154.

† Obs. on Cow-pox, p. 23 and 43. Compare Mr. Evans's Cases, Med. and Phys. Journal for Nov. 1799, and those stated by Mr. Andrè, of Petworth, Mr. Kelson, Mr. Ward, Mr. Blair, Mr. Harrup, and other practitioners, in the succeeding numbers of the same Journal. See also Mr. Ring's Treatise on the Cow-pox, and History of Vaccine Inoculation, p. 83, 87, 195, 220-9, &c. and the London Med. Review, Vol. I.—II.

‡ PL. I. No. 3. exhibits a Vaccine Vesicle on the ninth day, as it appeared on the arm of a boy who had been inoculated with Variolous matter ten days before Vaccination. B denotes a Variolous Pustule at a little distance from the Vesicle, C another Variolous Pustule, which rose and maturated, within the border of the Vaccine Vesicle. Matter taken from C communicated the Small-pox,

me of the correctness of this observation, which affords an answer to the query in Dr. Woodville's second publication "On Cow-pox," page 7, and to similar questions by many other writers.

The conclusion to be made from the foregoing statement is, that Variolous and Vaccine virus, inoculated at the same time, restrain the operation of each other on the body, and somewhat alter the form of the pustules or vesicles, without effecting any change in the qualities of the fluid they contain. Several medical writers supposed that the disease thus produced was hybridous. In that case it would not have been either Variolous or Vaccine, but would have possessed distinct qualities, and have exhibited peculiar effects: it might even have proved a new contagious eruptive disorder, not capable of preventing either the Small-pox or the Cow-pox. I can, however, inform those gentlemen, who have shewn some anxiety respecting the patients affected with eruptions, that they are as safe as the inoculated Small-pox can render them. Some hundreds of them have been, at different times, exposed to infection in the wards of the Small-pox Hospital, and have even lain in the beds there, without experiencing the least inconvenience.

Small-pox, while fluid taken from the opposite edge of the Vesicle communicated the Cow-pock. I have mentioned similar results in a case where the natural Small-pox appeared six days after Vaccination: See Reports on Dis. in London, p. 314.

It was thought that Mr. Paytherus* had fully settled the controversy respecting this Variolous eruption connected with Vaccine Inoculation: Mr. Dunning, however, seems still unwilling to relinquish the idea of an hybrid disease, from which he expects considerable advantages †. Other gentlemen wish to introduce the inoculation with Vaccine and Variolous matter at the same time, hoping thereby to prevent any extensive, or suppurative eruption. This practice might probably be attended with very great success; but as it must disseminate contagion (page 6), it would forego the chief advantage of Vaccine Inoculation.

* Comparative View of Facts and Observations relating to the Cow-pox, 1800-1.

† Postscript to Minutes, p. 111. I have noticed elsewhere the difficulty if not impracticability of his plan: See Rep. on the Diseases in London, page 314. When Variolous matter is inserted eight or ten days before Vaccine Inoculation, the fluid in the Vaccine Vesicle becomes purulent, or is mixed with pus, after the tenth day (PL. I. No. 3), and in this state, according to the observation of Mr. Wachsel, it will sometimes communicate the Small-pox only, but not always in the mildest form. Experiments made at the Small-pox Hospital seem, however, to prove, that in Variolous Inoculation, matter taken from a favourable kind of pock, will produce a milder disease than the ichor of the chrystalline confluent Small-pox.—Dr. Adams inoculates twelve persons with selected matter, then from the mildest case of the twelve he inoculates twelve more. When this process has been several times repeated, the matter uniformly produces, by inoculation, a round inflamed pustule, the maturation of which is attended with a moderate degree of fever, and an eruption of distinct, hard, whitish pustules:—but I ought not to anticipate his observations on this curious subject.

§ II. ON THE CHARACTERISTICS AND EFFECTS OF PERFECT VACCINATION.

VACCINATION is accounted perfect, when recent lymph has been carefully inserted beneath the cuticle, in a person free from any contagious disorder, and has produced a semi-transparent, pearl-coloured Vesicle, which after the ninth day, is surrounded by a red areola, and afterwards terminates in a hard, dark-coloured scab.--- The form and structure of this Vesicle is peculiar. It's base is circular, or somewhat oval, with a diameter of about four lines on the tenth day; see PL. I. No. 4. A. Till the end of the eighth day, it's upper surface is uneven, being considerably more elevated at the margin than about the center and sometimes indented by one or two concentric furrows, but on the ninth or tenth day the surface becomes plane, and in a very few instances the central part is highest. The margin is turgid, firm, shining, and rounded* so as often to extend a little beyond the line of the base. The Vesicle consists internally of numerous little cells†, filled with clear lymph, and commu-

* This convex, wheel-shaped margin, being the criterion of a perfect Vesicle, is represented separately, PL. I. No. 4. B.

† These are perhaps only a portion of the cellular membrane distended by the effusion of lymph. Most other Vesicular eruptions consist of simple Vesicles. DEF. IV.

nicating with each other. The areola, which is formed round the Vesicle, is of an intense red colour. It's diameter differs in different persons from a quarter of an inch to two inches, and it is usually attended with a considerable tumor and hardness of the adjoining cellular membrane. On the eleventh and twelfth day, as the areola declines, the surface of the Vesicle becomes brown in the center, and less clear at the margin C. The cuticle then begins to separate, and the fluid in the cells gradually concretes into a hard rounded scab of a reddish brown colour. This scab becomes at length black, contracted, and dry, but it is not detached till after the twentieth day from the inoculation. It leaves a permanent circular cicatrix, about five lines in diameter, and a little depressed, the surface being marked with very minute pits or indentations, denoting the number of cells of which the Vesicle had been composed. PL. II. No. 3. A.

During the progress of the Vesicle some disorder takes place in the constitution, and there is frequently on the arms and back a papulous eruption resembling some forms of the Lichen and Strophulus*. These circumstances we should by analogy judge desirable; but they do not always occur, nor are they deemed requisite to ensure the full effect of Vaccine Inoculation †,---that effect,

* On Cutaneous Diseases, Ord. I.

† See Appendix, No. I.

which,

which, as ascertained and announced by Dr. Jenner, is allowed to be more important than any event which the history of medicine can furnish. He says, "Those persons on whom the Vaccine Vesicle has been excited by perfect matter, and has completely gone through the progressive stages of inflammation, maturation, and scabbing, are ever after secure from the infection of the Small-pox, neither exposure to the Variolous effluvia, nor the insertion of the matter into the skin, producing that distemper*." We cannot now withhold our assent to this position generally, since the truth of it has been confirmed by the active experience of the most eminent physicians and surgeons, and by the opinion of other scientific men accustomed to investigation. I refer, 1. to the body of evidence collected, in this country, by Dr. Jenner himself, by Mr. Jenner, Dr. Woodville, Dr. Pearson, Dr. Lettsom, Dr. Bradley, and Dr. Batty; Dr. Thornton, Dr. Marshall, and Dr. Walker; Dr. Barry, Dr. Cappe, and Dr. Best; Dr. Trotter, Dr. Rollo, Dr. Adams, Dr. Tierney, Mr. Knight, Mr. Ring, Mr. Aikin, Mr. Paytherus, Mr. Blair, Mr. Addington, Mr. Gardner, Mr. Wachsel, Mr. Creaser, Mr. Simmons, Mr. Dunning, Mr. Little, &c. and supported by the favourable testimony of practitioners in every part of the kingdom:---2. To the evidence collected on the continent of Europe, in India, and the American States, by Dr.

* Inquiry, p. 7.; or Med. and Phys. Journal for June, 1801.

Aubert, Dr. Colon, Dr. Colladon, Dr. Moreau, Dr. Husson, and by the medical committees of Vaccination at Paris, by Dr. Odier, Dr. Macdonald, Dr. Careno, Dr. Osiander, Dr. Domeier, Dr. Rouger, Dr. Sacco, Dr. Valentin, M. Stromeyer, M. Fournier, M. Le Merchier, M. Chauvot, M. Voisin, Dr. Muir, Dr. Scott, Dr. Anderson, and Mr. Shoolbred, Dr. Waterhouse, Dr. Mitchill, Dr. Rush, Dr. Coxe, &c.---3. To the opinion and approbation of persons not medical, but whose attention to the subject has enabled them to form a correct judgment. In this country I may be allowed to mention our enlightened and paternal Sovereign, with their Royal Highnesses the Prince of Wales, the Dukes of York, Clarence, and Sussex: the Duke of Bedford; the Earls of Derby, Berkeley, Egremont, Carnarvon, Westmeath, and Elgin; Viscount Sidmouth; Lords Somerville, St. Asaph, Rous, Gardner, Keith, and Hutchinson; Sir Joseph Banks, Bart. Wm. Wilberforce, Esq. Admiral Berkeley, Sir Charles Price, Bart. Thomas Bernard, Esq. J. J. Angerstein, Esq. Wm. Fermor, Esq. B. Travers, Esq. Henry Hickes, Esq. The Rev. G. C. Jenner, Rev. Herman Drewe, Rev. W. Finch, Rev. J. Berrington, Rev. Dr. Booker, Rev. Mr. Fielding, Rev. Mr. Ferryman, Rev. Mr. Gale, Rev. Mr. Holt, Rev. Mr. Reed, Rev. Mr. Fosbrooke, Rev. Dr. Vivian, Rev. Dr. Barry, Rev. Mr. Plumptre, Rev. Mr. Robinson, Rev. Mr. Griffin, Rev. Mr. Bennett, Rev. Rowland Hill.

I need

I need not here give an account of the success and extent of Vaccination at the Inoculation-Hospital, at the stations of the Royal Jennerian Society, and at other public Institutions within the metropolis, as the result has already appeared in print, and has been extensively distributed *. If the numbers vaccinated by private practitioners could be laid before the public, and their success ascertained, we should, I am convinced, obtain a most satisfactory proof of the advantages of Vaccination. On making an enquiry, with this view, of the medical gentlemen, whom I have had the pleasure to meet in the course of the last three months, I have learned that those mentioned below †, have vaccinated more than 18,000 persons, who

* The number of persons vaccinated at Charitable Establishments in London, since Midsummer, 1799, cannot be less than 50,000.

† Mr. Abernethy, Mr. Adamson, Mr. Anderson, Mr. Andrews, Mr. Austin, Mr. Barnett, Mr. Beaumont, Mr. Beveridge, Mr. Blathwait, Mr. Bowle, Mr. Brougham, Mr. Brown, Mr. Bryant, Mr. Cairncross, Mr. Cates, Mr. Chamberlaine, Mr. Cooper, Mr. Craven, Mr. Dale, Mr. Dean, Mr. Davies, Mr. Delahoyde, Mr. Dimsdale, Mr. Dixon, Mr. Donelly, Mr. Dunn, Mr. Dymond, Mr. Dyson, Mr. Ford, Mr. Foster (Hitchin), Mr. Gaskell, Mr. Gilder, Mr. Good, Mr. Griffith, Mr. Hall (Dulwich), Mr. Hallam, Mr. Hawkins, Mr. Hay, Mr. Hill, Mr. Holt, Mr. J. H. Hooper, Mr. Haworth, Mr. Hunter, Mr. Ireland, Mr. Jackson, Mr. James, Mr. Jones (Grace-church Street), Mr. Johnson, Mr. Key, Dr. Langslow, Mr. Mackinder, Mr. Mariner, Mr. Marshall, Mr. Maule, Mr. Merriman, Mr. Miller, Mr. Morrison, Mr. Morgan, Mr. Ogle, Mr. Ogilvy, Mr. Owen, Mr. Pearson, Mr. Pennington, Mr. Perfect, Mr. Phillips, Mr. Platt, Mr. Price, Mr. Pritchard, Mr. Ramsden, Mr. Revans, Mr. Robertson,

who have since remained free from the Small-pox, though most of them were afterwards either inoculated with variolous matter, or exposed at different periods to contagion.

Many parents of increasing families among the lower classes of people, influenced by varying rumours and considerations, have had some of their children vaccinated, and others subjected to Variolous Inoculation. Under such circumstances, when the youngest child has the Small-pox by inoculation, those who have been previously vaccinated, are constantly exposed to infection for several successive days. Mr. Wachsel has noted this change in the mode of inoculating, in more than an hundred families, without observing one instance of variolous fever and eruption among the vaccinated children*.

About fifty children have been re-inoculated at the Small-pox Hospital with Variolous matter, some years after Vaccination; I have myself seen the test of Variolous

son, Mr. Robinson, Mr. Saumarez, Mr. Seares, Mr. Simons, Mr. Simpson, Mr. Smith, Mr. Soley, Mr. Stanton, Mr. Taylor, Mr. Taylor (Pentonville), Mr. Taylor (Whitechapel), Mr. Uppom, Mr. Walford, Mr. Welbank, Mr. Wilkinson.

* Numerous facts of this kind, relating to families or individuals, are recorded in Mr. Ring's Treatise on the Cow-pox; and in the Medical and Physical Journal, by Mr. Shorter, Dr. Wilson, Mr. Leese, Mr. Custance, Mr. Sergeant, Mr. Philips, Mr. Clement, Mr. Blount, Mr. Wales, Mr. Whalley, Mr. Thomas, Mr. Maurice, Mr. Washbourn, Mr. Pears, Mr. Wainwright, Mr. Scott, Mr. Taynton, and by the Rev. Mr. S. L. Armstrong.

Inoculation applied to one hundred and eighty other persons, vaccinated at different times by experienced practitioners. The greatest effect that was produced in any of these persons is exhibited PL. I. No. 8. A. represents a pustule of the 10th day from Variolous Inoculation, on the arm of Miss Gilbert, Holborn: she had been vaccinated three years and two months before.---B. No. 9. was the appearance about the 8th day, on the arm of another child, vaccinated one year and two months before *. Both these children have likewise been repeatedly exposed to the contagion of the natural Small-pox, without any effect.

In other instances of Variolous inoculation after Vaccination, the pustules generally resembled that which is exhibited PL. I. No. 10†. A similar effect is produced by inoculating with Variolous matter a person who has previously had the Small-pox. The matter contained in the pustule thus excited, either after the Small-pox or after

* Some of the Cow-pox Ravens, that hovered over these children, alarmed the parents by foreboding a severe disease; but the inflammation on the arms suddenly subsided on the 10th evening, and was not succeeded either by fever or eruption.

† The drawing was made from the inoculated arm of a young woman, who had had the small-pox fourteen years before, in order to compare it with the appearances on the arm of my own son, when inoculated with variolous matter, three years after vaccination. His pustules, however, so nearly resembled the above, that I thought a repetition of the drawing unnecessary.

Vaccine

Vaccine inoculation, is found capable of communicating the Small-pox to those who have not before been affected with that disease.

Dr Stanger, physician to the Foundling-Hospital, has favoured me with the result of a series of inoculations with Variolous matter, at different periods after Vaccination*. Thirty-five children, vaccinated between the 30th of March 1801, and the end of May 1802, were inoculated with recent Variolous matter, on the 9th of August, 1802.

"In most of these cases the puncture presently healed: in some, slight inflammation was produced, and in three or four of the cases, there appeared a small, acuminated pustule, which, after some days, was succeeded by a slight scab, no constitutional disorder having intervened."

"In November, 1804, twenty-one of the children vaccinated in 1801, and afterwards variolated in 1802, were a second time inoculated with matter taken from a child labouring under the natural Small-pox:---The result of this trial made three years and a half after Vaccination, confirmed its preventive power. The only effects produced were slight inflammation about the puncture in some cases, and in a few others a small local pustule, which soon disappeared."

* See the Statement more at large, in the Med. and Phys. Journal for Dec. 1805.

Experiments

Experiments made, in 1804, by the Physicians and Surgeons of the Vaccine-Pock Institution, shew "that above fifty persons, who had been vaccinated there, from three to five years before, and ten who had been vaccinated at a later period, were incapable of taking the Small-pox by inoculation, in circumstances chosen as most favourable for infection; for many of the subjects were exposed to the effluvia of the Small-pox patients; they were all inoculated in three times the usual number of places; they were all inoculated with efficacious and recent matter, and, with many of them, unusual pains were bestowed to introduce the matter quite fluid, immediately from the Variolous pustules."

"To obtain the above sixty cases, application was made to two hundred and fifty different families, four-fifths of whom would not allow the re-inoculation to be instituted: the reason assigned by most of them was, that they were sure the Small-pox could not affect them, having been so often and so favourably exposed, namely, by sleeping, handling, playing, nursing, and in other ways coming in contact with Small-pox patients*."

* Statement of Evidence from trials by Inoculation of Variolous and Vaccine Matter, &c. &c. 1804, p. 65 & 74.

Mr. Goldson observes*,

"The full extent of the powers of Vaccination can only be ascertained when the Small-pox shall again become the prevailing epidemic:---when the state of the atmosphere shall again be so far variolated, that seclusion can be of little avail; then will be the time to prove, how far the security Vaccination gives, will extend."---This crisis appears to have taken place in the metropolis last year, when the Small-pox was more extensively diffused, and proved more fatal than it had been in any of the four preceding years†. All persons resident in or near London, who had been vaccinated since the beginning of 1799, but especially the children

* Recent Cases, pag. 133.

† In the year 1805, died of the Small-pox,

In January	29,	In July	152,
February	20,	August	127,
March	16,	September	213,
April	34,	October	363,
May	37,	November	322,
June	65,	December	401.
		Total	1779.

In the year 1801 died of the Small-pox 1461,
1802 - - - - - - - 1579,
1803 - - - - - - - 1202,
1804 - - - - - - - 622,

according to the London bills of mortality.

of

of the poor, must have had frequent intercourse with Variolous patients during the time of the epidemic. The primary series of Vaccine Inoculations were thus tried in the severest manner possible, yet the subjects of them, to the amount of many thousands, or even tens of thousands, remained proof against the contagion.

Whilst we acknowledge that some, who had been vaccinated in the preceding years, took the Small-pox at this period, we have reason to congratulate ourselves that the number was so small, and that so few mistakes had been committed in a mode of practice entirely new. Mr. Goldson himself allows, "It was not extraordinary such cases should occur in the early stages of its introduction."—"Indeed, prior to the nature of the disease being sufficiently understood," he says, after Dr. Jenner, "many practitioners took up the lancet, without ever having seen the Vaccine Pustule*."

In addition to what has been already advanced, striking proofs of the complete preventive power of Vaccination with regard to the Small-pox, transmitted by physicians and surgeons of eminence, are given in the Appendix.

* Cases of Small-pox subsequent to Vaccination, 1804, pag. 3, 4.

But is it necessary to the advancement of Vaccine Inoculation, or to the reputation of Dr. Jenner, that we should acknowledge his position (pag. 11.) to be true universally, and invariably? Experienced practitioners will be disposed to answer this question in the negative, since no absolute certainty can be obtained of the precise effects of any medical or chirurgical process. In the infinite diversity of human constitutions, there may be some which are neither susceptible of the Vaccine Disease, nor the Small-pox*, others which are susceptible of the former and not of the latter†, or vice versa‡, and others which are susceptible of both at the same time, or, to a certain degree, at separate times§: there may also be a few in which the inoculation excites a new mode of action, terminating in Erysipelas‖, phagedenic Ulcer,

* Mr. Bryce, Practical Observations on the Cow-pox, pag. 120. Report of the Vaccine-pock Institution, pag. 87, 94.

† Dr. Jenner, Inquiry, pag. 60, and Continuation of Facts, pag. 165. See Mr. J. Pearson's communication, in the Appendix.

‡ Jenner, pag. 61.

§ Dr. Jenner, Inquiry, pag. 61. Farther Observations, p. 117, 122.

‖ See Dr. Barry's, and Mr. Maddock's Cases, M. and P. Journ. Feb. and Nov. 1801; also Dr. Clutterbuck's, Medical and Physical Journal, Aug. 1801, and Mr. Morrison's, Med. and Chirurg. Review, Vol. IX. p. 389.

An universal Erysipelas sometimes also takes place after Variolous Inoculation,

cer*, or other morbid appearances not necessarily connected with the specific disease. Several of these anomalies or exceptions to the general rule have occurred, but certainly not so often as was expected by those who considered the subject, from the first, dispassionately, nor have they been in sufficient number to form any serious objection

culation, and proves fatal before the Small-pox appears. I have seen two cases of this kind. But one instance of it is recorded in the books of the Inoculation Hospital. Such cases do not perhaps occur, either from Variolous or Vaccine Inoculation, in a greater proportion than one out of fifty thousand.

* The two singular and unfortunate cases, which occurred in the family of Mr. Watts, St. Mary Axe, I cannot mention without extreme regret. The public will, at some time, be favoured with a statement respecting them by the distinguished practitioner who gave a constant and minute attention to all the circumstances.—Most untoward events sometimes occur in medical practice from slight and unexpected causes. A blister has proved deleterious in particular constitutions. The effect produced on an individual by the bites of leeches, I will describe in the sufferer's own words. " My health having been impaired by close attendance on a near relation through a long and painful illness, I got my feet wet on the 20th of February, 1798. Some hours afterwards a swelling formed in my right cheek, attended with much pain and inflammation. Three leeches were immediately applied, and they appeared to reduce the swelling. The uppermost orifice made by them healed in a few days, the two others remained troublesome: I applied court-plaister to defend them from the air, till, finding the inflammation increase, I discontinued the application. In a few days neither redness nor swelling was perceptible, but an incrustation formed on each place, and as the crusts fell off others succeeded. This process went on for four months, without any alteration in the size of the wound. In the following

jection to the practice founded on Dr. Jenner's discovery. Similar irregularities observed in the constitutions of persons inoculated for the Small-pox, and given to the public in very aggravated statements, did not deter our predecessors from Variolous Inoculation, though, at it's commencement, one in forty or fifty died of the communicated disease, or of chronic distempers afterwards.---The too zealous and enthusiastic advocates for the new inoculation, who extended their views far beyond the limits of analogy or probability, have done no service to the cause*. Dr. Jenner has expressed his own sentiments with moderation. He thinks "the animal œconomy is precisely under the same laws with respect to the action of Variolous and Vaccine Virus†;" hence he concludes that both

following two months different applications were made, but unsuccessfully, for the two specks spread into an irregular ulcer, of nearly two inches diameter. A visit to the sea-side in August and September produced some favourable effects, but on the approach of winter the complaint relapsed into it's former state."

The ulcer, I am sorry to add, is not yet healed (May, 1806), and other small ulcerations have been formed above it, and on the side of the nose, which are likely to be as troublesome as the first.

* Mr. Goldson, Conclusion, pag. 131.

† By admitting that the effects of Variolous and Vaccine Virus on the human constitution are analogous, we do not establish the identity of the two fluids.—They probably differ both in their origin and the mode of their operation; but whatever judgment may be given on these points, it cannot alter the state of facts relative to Vaccine Inoculation.

of

of them are, by inoculation, preventives of the Small-pox, but that the advantages are greatly in favour of Vaccine Inoculation, because it is equally safe at all ages and in every season, and does not occasion confinement,---because it neither diffuses contagion, nor excites Scrophula, and because it is free from the danger attending the inoculated Small-pox, which still proves fatal in one case out of two hundred and fifty.

With these concurring circumstances on the side of Vaccine Inoculation, the balance would still remain in it's favour, even though its preventive power might be found somewhat less certain than that of Variolous Inoculation. Dr. Jenner, "for argument's sake, not from conviction," puts the question, whether, "if one person in an hundred, after having had the Cow-pox, should be found susceptible of the Small-pox, this would invalidate the utility of the practice?"---It does not appear that failures in the preventive effect of Vaccine Inoculation, including mistakes, negligences, and mis-statements*, have occurred in a greater proportion than as one to eight hundred. Let me then re-state the question, "If one person in a thousand should, after Vaccination, be found susceptible of the Small-pox, would the utility of Vaccine Inoculation be invalidated?" Surely not.---I

* Further Observations, pag. 115.

trust,

trust, however, that, when the practice has been continued five or six years longer, the number of failing, or anomalous cases, will not exceed the proportion of one in three thousand, and will nearly concide with the number of failures or anomalies in the inoculated Small-pox. But taking either of the proportions last mentioned, we must acknowledge the advantages of Vaccine Inoculation, and confirm the deduction made from Dr. Jenner's discovery, ---that the Cow-pox, under proper regulations, affords the means of finally eradicating the Small-pox.

The objections made against Variolous Inoculation, when first introduced into England (1721-4), were very similar to those now adduced against the Vaccine.

It's opponents urged,

1. That it did not prevent the Small-pox in future*.

2. That

* Dr. Wagstaffe says, "the chief and main axiom of the inoculators is, 'That none who have been inoculated can ever catch the natural Small-pox after,' which seems to be directly contradicted in the cases of the daughter of Mr. Degrave a surgeon, and Captain Hussart." Dr. W. infers from these cases, which are unfairly stated, that "The Small-pox is as much catching afterwards as before the ingraftment," and that "the experiment is as hazardous as it is useless."—On the Danger and Uncertainty of inoculating the Small-pox: pag. 40, 43, 48.

"I fear they may be accounted physicians of no value, and forgers of lies, who so confidently tell us what is impossible for them to know, namely, that

they

2. That if patients escaped the danger arising from the fever and eruptions, it still produced a variety of chronic distempers, which either deformed the skin, or undermined the constitution, such as boils, pimples, the itch, tumours, ulcers, imposthumes, caries of the bones, hectic fever, consumption*, &c.

they who undergo their experiment are for ever thereby secured from any future danger of infection." Pag. 18. Rev. Mr. Massey's Sermon against the dangerous and sinful Practice of Inoculation, 1722.

Dr. Clinch having been misled by two cases falsely represented to him, likewise endeavours to prove "that Inoculation is no security from the natural Small-pox." Historical Essay on the Small-pox, pag. 5. He therefore gives the following caution: "Let no one, upon presumption of his having had this distemper by inoculation, trust himself where there is infection;" pag. 19. Compare Mr. Isaac Massey's Account of Inoculation, pag. 2, 3.

The question, whether inoculation be any security against the Small-pox, was not decided satisfactorily to Dr. Hillary in 1725. See Woodville on Inoculation, p. 214.

* Dr. Wagstaffe, pag. 15 & 60.

He remarks on the inoculation of Miss Degrave, "that it ingrafted on her such an ill habit of body, that had the morbific matter, instead of breaking into boils and imposthumes, and after that perhaps into the itch itself, been thrown upon the lungs, or any other vital part, a long and tedious disease, or inevitable death must have been the consequence," pag. 43.—The young lady's father, in a letter to Dr. Jurin, positively contradicts the whole statement of the case by Dr. Wagstaffe and Mr. Howgrave, and concludes his observations as follows: "I shall expect that the interested opposers of Inoculation will soon spread abroad, that withered arms, perpetual running sores, and perhaps cloven feet, are the sure and constant effects of inoculation; and that the horn upon the woman's head, now shewn in town, sprung from inoculation."

3. That it might communicate other distempers besides the Small-pox *.

4. That it did not always produce the same disease †.

5. That it communicated the Small-pox to those who had previously taken the disease by casual infection ‡.

* "Suppose the person the matter is taken from, has the king's evil, the pox, madness, or some other inveterate disease—I am sure the inoculator can give no reason why it should not convey one distemper as well as the other." Wagstaffe, pag. 45.

† "Scarcely a fourth part of those who have been inoculated in this city, have had a true and genuine Small-pox; and it is so far from certain, that the seeds of this distemper thus transplanted from one person to another will always produce the same disease, that our experience here convinces us to the contrary; and this is agreeable to what happens frequently in other cases." Wagstaffe, page 17.

In the preceding page Dr. Wagstaffe says, "the matter inoculated from a boil, or any other imposthume, will produce eruptions in the skin," and will have the same effect as matter taken from Variolous pustules.

Mr. Isaac Massey, apothecary to Christ's Hospital, says, "Every physician that saw the inoculated at Newgate, knows that not *one* of them had the *true genuine* Small-pox, but only some few fading eruptions, that disappeared in three or four days." Pag. 2. Short and Plain Account of Inoculation, 1722. In pag. 3, he boldly asserts, "they will take the disease again."—He supposes that, "out of the first hundred persons inoculated, forty might have had the genuine Small-pox, but that forty more had only a *bastard sort*." He says, "three or four died, and the remainder were so differently affected, that no satisfaction could be derived from the practice." P. 4.

‡ Dr. Wagstaffe, page 31

6. That

6. That it often produced an unfavourable confluent sort of Small-pox, however carefully the matter might have been selected*.

7. That the inoculated disease proved as fatal as the natural Small-pox†.

Hence they concluded, that Inoculation is " useless," " dangerous," " repugnant to common sense," " and entirely destructive to the good of the public, and the very

* " Another of their maxims, *that inoculated Small-pox are always favourable,* has been often confuted by a variety of different sorts, and by the flux kind, frequently appearing in those who have escaped. Both Mr. Sp—r, and the Lord B—st's servants, who have sealed, if I may say so, the falsity of this aphorism with their blood, are woeful instances of the *fatal effects* of this experiment." Wagstaffe, pag. 32.

† " The life of every one thus inoculated is as eminently in danger, as in those who suffer from it in the accidental way." P. 27. Sparham's Reasons against the Practice of inoculating the Small-pox, 1722.

Mr. Howgrave, in his Reasons against the Inoculation of the Small-pox (1724), pag. 5, says the " method is both unsafe and uncertain."

Dr. Wagstaffe says, " Hardly *one* in an hundred have died of the *natural sort* in this season." Pag. 63.

Mr. Massey, and after him Dr. Hillary, observes, " that inoculators have the advantage by taking only healthy subjects with good constitutions, whereas the distemper itself " seizes others indiscriminately." The computation therefore of the number of those who die of each sort may probably be placed on a very unfair and unequal bottom." Hillary, pag. 28.

being and intention of a community*."---Notwithstanding these strong expressions of Dr. Wagstaffe, he affects great candour.---" Had it been always *slight, gentle, safe, and useful;* had none had above *an hundred or two hundred pustules,* and no one died of it in the space of several years; and had there been no instance of *any one's being ever again infected, who had had any pustules at all, how few soever, raised by inoculation,* nobody would have sooner subscribed to it than myself.---I should always have looked on it as the greatest blessing to our country, and have thought the person who transplanted it among us could never have been too well rewarded, or have had too great honours conferred on him, for so *beneficial* and so *important* a service†."

Dr. Jurin's arguments in favour of Variolous Inoculation‡ were fully confirmed by experience, in twenty or

* Dr. Wagstaffe, pag. 61.—3. " In short 'tis a contra-præter-un-natural practice," (I. Massey, p. 39.) " A diabolical operation," Rev. Mr. Massey's Sermon.

† Pag. 64—5. Letter to Dr. Friend, shewing the danger and uncertainty of inoculating the Small-pox. By W. Wagstaffe, M. D. Fellow of the College of Physicians and of the Royal Society, and one of the Physicians of St. Bartholomew's Hospital. 1722.

‡ An Account of the Success of inoculating the Small-pox in Great Britain, 1723—6. Compare Kilpatrick's Essay on Inoculation. London, 1743.

thirty

thirty years. We shall, I trust, in a much shorter period, be made generally sensible of the benefits of Vaccination, and witness it's triumph. A steady perseverance in the practice of it, under regulations hereafter to be mentioned, would remove from among us the chief exciting cause of Scrophula, and would prevent the mortality by the Small-pox, amounting to more than forty thousand deaths annually in the united kingdom.

According to Dr. J.'s calculation, the mortality of the casual Small-pox is eight or nine times greater than that of the inoculated disease. He observes that " boils and abscesses, and such like accidents, frequently happen upon having the natural Small-pox: but," he says, " I limit my comparison to the hazard of life itself, and see no reason to doubt but such a way of having the disease as less endangers life, must be likewise more favourable in all other particulars.---This the adversaries of Inoculation do not pretend to deny." 1724, pag. 30.

These " adversaries" contended that Variolous Inoculation, if a preventive at all, would be only a temporary preventive of the Small-pox: the same assertion has been made by the opponents of Vaccination. As we refer them to some old inhabitants of the vale of Gloucestershire, who, by means of the natural Cow-pox, have been secured from the Small-pox more than half a century, so did Dr. Jurin refer his antagonists to the custom in Pembrokeshire,

brokeshire, of buying Variolous matter, and rubbing it on a slight scratch made in the skin of the hand or arm, which practice was generally successful, and had been continued there through many generations*. If this indigenous mode of inoculating had, through the exertions of a scientific promulgator, been adopted instead of the Turkish method by large painful incisions, how much more easy and successful would have been the progress of Inoculation in our island!

* See the Letters of Dr. Williams, and Mr. Wright, of Haverfordwest, in Jurin's first publication, 1723.

§ III. ON IMPERFECT VACCINATION.

VACCINATION is imperfect, or insufficient, I. When the fluid employed has lost some of it's original properties. II. When the persons inoculated are soon afterwards affected with any contagious Fever. III. When they are affected, at the time of inoculation, with some chronic Cutaneous Disorders.

I. The qualities of the Vaccine fluid are altered soon after the appearance of an inflamed areola round the vesicle: and the fluid, although taken out of a vesicle in the best possible state, may be injured by heat*, exposure to air, moisture, rust, and other causes.

When scabs are formed over Variolous Pustules, and Vaccine Vesicles, the matter they afford is often acrid and putrescent†, and, if inoculated, it perhaps neither communicates the Vaccine-pock, nor the Small-pox, but produces a fatal disease, with symptoms similar to those which arise from slight wounds received in dissecting putrid bodies. Should the pustules of Small-pox remain entire till the twentieth day of eruption, matter taken from

* Packets which contain Vaccine fluid should not be sealed with burning wax.

† See Mr. Ring's Treatise on the Cow-pox, pag. 372. and Mr. Paytherus, pag. 49, &c.

them,

them, even at that period, will sometimes communicate, by inoculation, the disease in it's usual form, though perhaps with considerable virulence*. We are, however, now assured on good authority, that matter improperly kept, or the thick matter taken from collapsed and scabbing Variolous Pustules, and used for the purpose of inoculation, does not always produce the Small-pox, nor prevent the future occurrence of that disease, although the persons inoculated may have had inflammation and suppuration of the arm, and pains in the axilla, with fever and eruptions on the ninth or tenth day†. In like manner if the Vaccine fluid employed be taken at a late period, as from the twelfth to the 18th day, it does not always produce the genuine cellular Vesicle, but is in some cases wholly inefficient, while in others it suddenly excites a pustule, or ulceration, in others an irregular vesicle, and in others erysipelas. Similar appearances are observed, when fluid taken from a perfect vesicle on the sixth, seventh, or

* Dr. Watson's Account of a Series of Experiments at the Foundling Hospital, pag. 32.

† See Mr. Kite's, Mr. Earle's, Mr. C. B. Trye's, and Mr. Phytian's Cases, Mem. Med. Soc. Vol. IV. Med. and Phys. Journal, Dec. 1801. Nov. 1804. and Mr. Ring, pag. 57, 59, 474, 983, &c.

The persons thus inoculated did not appear to have received any advantage from the inoculation. When they afterwards took the Small-pox, some of them "had a very full burden," and "others died." Dr. Jenner's Enquiry, pag. 52, 83, &c.

eighth

been injured, before it's application, by some of the causes above enumerated. In addition to them, I may observe that if the Vesicle be ruptured, at an early period, by friction or scratching, the inoculation sometimes proves imperfect*. Failures may have also been occasioned by repeatedly puncturing, or draining the Vesicle, on two or three successive days. The fluid, which is afterwards secreted into the cells thus exhausted, may, by a difference of properties, or by too much dilution, be rendered incapable of acting fully, either on the person from whom it is taken, or on those to whom it is communicated. Some of the early failures, in persons inoculated at different public Institutions, are perhaps referable to this cause, the demands for Vaccine fluid in 1799 and 1800, having been very numerous, the cases to supply them comparatively few†.

II. Eruptive Fevers and other febrile diseases, interfere with the progress of the Vaccine Vesicle. The Measles‡,

* See Mr. G. Bell's Treatise on Cow-pox, p. 69. Mr. Dunning's, Dr. Walker's, and Mr. Ring's Observations, Med. and Phys. Journal, for Nov. 1805, for March and April 1806. Mr. Goldson's Recent Cases, p. 46.

† See Mr. Ring, pag. 301-2, and 908.

‡ See Dr. Winterbottom, Med. and Phys. Journal for May 1805; and the case of inoculated Measles, On Cutaneous Diseases, p. 219.

Scarlatina, Varicella*, Typhus†, and Influenza‡, appearing soon after Vaccination, either render it ineffective, or suspend the action of the virus, so that, in some cases, the progress of the Vesicle is very slow, and the areola is not formed till the fourteenth day or later, and sometimes not at all. Dr. Jenner has recorded the case of a child, on whom the Scarlatina, with a Sore-throat, appeared on the ninth day of Vaccine Inoculation§. The vesicle enlarged as usual, " yet there was a total suspension of the areola, until the Scarlatina had retired from the constitution." In a sister of this patient, the fever and scarlet efflorescence took place faintly on the same day, but suddenly disappeared, the areola having been formed round the vesicle. Four days afterwards, on the decline of the vesicle, the Scarlatina anginosa returned with it's usual symptoms.

III. The Cutaneous Diseases which sometimes impede

* Mr. Ring's Treatise, pag. 524, from Mr. Addington, and Med. and Phys. Journal for April 1803.

In Dr. Paterson's 1st. Case, Med. and Phys. Journal for July 1801, the Hydrachnis, or Swine-pox, seems to have wholly suppressed the action of the Vaccine fluid.—In Dr. Pole's Case (Journal for April 1801), Variolous infection retarded, for eight days, the expansion of the Vaccine Vesicle.

† Mr. Ring, pag. 660.

‡ Report of the Vaccine-pock Institution, 1803, pag. 44.

§ Further Observations, &c. pag. 138 and 170. Compare the Report of the Physicians of the Vaccine-pock Institution, for 1803, pag. 42, &c.

the

the formation of the genuine Vaccine Vesicle*, are Herpes (including the Shingles and Vesicular Ringworm), the dry and the humid Tetter, and the Lichen, but especially the Porrigo (or Tinea) comprizing the varieties denominated Crusta lactea, Area, Achores, and Favi, all

* Variolous inoculation sometimes fails from the same cause. See Dr. Jenner, and Mr. Hill, Med. and Phys. Journal, for June, 1805. Compare the Journal for May 1803, and Aug. 1804.

Dr. Jenner has favoured me with the following instance :—" The child of a Gentleman at Blakeney, Gloucestershire, was at two years of age inoculated for the Small-pox with others of the same family. In this child, there was a deviation from the usual appearances: the arm inflamed and suppurated, but not extensively: some slight indisposition took place, and a few pimples were scattered over the skin, which did not suppurate. The parents not being quite satisfied, the child was inoculated a second time, with variolous matter, about two years afterwards, when the appearances on the arm, and the disorder of constitution, recurred as at first. Soon after this time, the child was put to bed with a person who had a full burthen of Small-pox, but was not infected. When two years more had elapsed, the child was vaccinated by Mr. Lauder, an experienced and respectable surgeon at Newnham. The puncture produced only an incomplete Pustule, surrounded by considerable inflammation. Mr. Lauder then consulted me, and on my making inquiry respecting the state of the skin, he told me that the child, from its early infancy, had been affected with eruptions on its head, and other parts of the body. Feeling satisfied that he had thus accounted for the preceding circumstances, I endeavoured first to subdue the eruptions. As soon as this was accomplished, the child was again vaccinated, when a Pustule appeared, which went through all its stages, with the most perfect regularity and correctness."

of which are contagious. To these perhaps should be added the Itch and Prurigo*.

Imperfect Vaccination is not characterized by any uniform sign or criterion, but exhibits, in different cases, very different appearances, as pustules, ulcerations, or vesicles of an irregular form. The Vaccine Pustule is conoidal; it increases rapidly from the second to the fifth or sixth day, when it is of the appearance and size represented PL. I. No. 5. being raised on a hard inflamed base, with diffuse redness extending beyond it on the skin. It is usually broken before the end of the sixth day, and is soon after succeeded by an irregular yellowish brown scab. The redness disappears within a day or two, and the tumour gradually subsides. According to Dr. Jenner, "It's commencement is marked by a troublesome itching, and it throws out a premature efflorescence, sometimes extensive, but seldom circumscribed, or of so vivid a tint as that which surrounds the pustule (vesicle) completely organized; and (which is more characteristic of it's degeneracy than the other symptoms) it appears more like a common festering produced by a thorn, or any other small extraneous body, sticking in the skin, than a pustule

* Appendix, No. 1. Dr. Jenner is of opinion that sulphur, when it has been used largely in these complaints, prevents the operation of the Vaccine virus. See Dr. Tierney, Diss. Inaug. or Mr. G. Bell's Treatise on the Cow-pox, pag. 87.

vesicle

(vesicle) excited by the vaccine virus. It is generally of a straw colour, and when punctured, instead of the colourless transparent fluid of the perfect vesicle, it's contents are found to be opaque*."

Respecting the Ulceration, Dr. Jenner obseves†, "In a late case, the punctured part on a boy's arm (who was inoculated with fresh limpid virus), on the sixth day, instead of shewing, as usual, a beginning vesicle, was incrusted over with a rugged amber-coloured scab. The scab continued to spread and increase in thickness for some days, when at it's edges a vesicated ring appeared, and the disease went through it's ordinary course, the boy having had soreness in the axilla, and some slight indisposition. With the fluid matter taken from his arm, five persons were inoculated. In one, it took no effect; in another, it produced a perfect vesicle; but, in the other three, the progress of the inflammation was exactly similar to the instance which afforded the virus for their inoculation: there was a creeping scab, of a loose texture, and subsequently the formation of limpid fluid at it's edges‡."

These

* Med. and Phys. Journal, Aug. 1804.

† Further Observations, pag. 175. Compare Med. and Phys. Journ. Oct. 1804.

‡ Dr. J. remarks elswhere, "In some instances, the ring of Vaccine fluid fixed a boundary to the extension of the scab, the efflorescence followed, and the

Dr. Woodville has mentioned a similar appearance, and considers it as indicating an ineffectual inoculation.

He refers " to cases in which it happens, that though the local affection does not exhibit much more inflammation than is usual, yet neither vesicle nor pustule supervenes, and, in which, about the sixth or seventh day, it rapidly advances into an irregular suppuration, producing a festering or crustaceous sore *."

These ulcerations probably originate from the Vaccine Pustule, which on account of the itching it excites, is sometimes scratched off at a very early period, or being prominent and of a loose texture, is injured and exasperated by the friction of the clothes, &c.

the constitution was found secure from the Small-pox; but in other instances, the process ended more abruptly, and then of course the susceptibility of the Vaccine virus remained, which was proved by subsequent inoculation."

* Observations on the Cow-pox, pag. 34-5.

The accurate and judicious physicians of Horncastle have favoured us with statements on this subject, which deserve attention. In two children vaccinated by means of a thread, the arms, after twenty-four hours, were slightly inflamed. The inflammation gradually increased during the third, fourth, and fifth days. On the sixth day, a " watery discharge took place from the inoculated part," and continued till the ninth day, when the extent of the inflammation nearly equalled that of a half-crown piece. On the tenth, " a scab had formed, covering a little purulent matter: from that time the inflammation subsided, and a dry dark-coloured scab remained on the arms for some weeks afterward." Dr. Fawssett, Med. and Phys. Journal, for Aug. 1801, and Dr. Harrison, Feb. 1801.

Inocu-

Inoculators are now generally acquainted with the Pustule and Ulceration above described; but the chief nicety and difficulty of Vaccination, is in distinguishing from the genuine Vesicle, some irregular Vesicles, which have often been mistaken for it, and which do not wholly secure the constitution from the Small-pox.

I have observed three sorts of these Irregular Vesicles. The first is a single pearl-coloured Vesicle, set on a hard dark-red base, slightly elevated. It is larger and more globate than the Pustule above represented, but much less than the genuine Vesicle: it's top is flattened, or sometimes a little depressed, but the margin is not rounded or prominent*.—The second appears to be cellular like the genuine Vesicle (page 9), but it is somewhat smaller, and more sessile, and has a sharp angulated edge. In the first the areola is usually diffuse, and of a dark rose-colour, PL. I. No. 6: in the second it is sometimes of a dilute scarlet-colour, radiated, and very extensive, as from the sting of a wasp; at other times it has the form and colour exhibited PL. I. No. 7. The areola appears round these Vesicles on the seventh or eighth day after inoculation, and continues more or less vivid for three days, during

* A vesicle of this kind appeared in the Vaccination of Miss Georgiana Whitworth (M. and P. Journal, August 1801. See the last note.) "It was," according to Dr. Fawssett, "more globular, and seemed to have a thinner pellicle than the genuine Cow-pock."

which

which time the scab is completely formed*. The scab is smaller and less regular than that which succeeds the genuine vesicle; it also falls off much sooner, and, when separated, leaves a smaller cicatrix, which is sometimes angulated.---The third irregular appearance is a Vesicle without an areola.

The Vaccine Pustule, and Ulceration, may sometimes arise from the insertion of effete or altered virus; but they mostly occur in persons labouring under the eruptive complaints mentioned page 35†.

The Irregular Vesicles are produced by some of the

* Mr. Whately has well described an irregular Vesicle as it occurred after Vaccine Inoculation, in two persons who had previously had the Small-pox. "A slight inflammation took place round the punctures on the second day, and gradually increased to the ninth, when it's appearance was erysipelatous, and it's extent round the vesicle was at least a hand's breadth. It had not the areola usually met with in the Cow-pock; but in two places there were red lines of the breadth of a finger, in the course of the lymphatics. On the eighth day there was much pain in the axilla, with feverish symptoms, and loss of appetite. From this time, the inflammation declined, and in four days, it wholly disappeared, leaving on the inoculated part, a hard horny scab, which did not fall off for some days. See Mr. Ring's Treatise, pag. 611.

† See Dr. Jenner's Obs. M. and P. Journal, for Aug. 1804. Mr. Hutchinson's, April 1801. The effect of cutaneous eruptions on the Vaccine Vesicle is frequent, not universal.—Compare Dr. Wood's and Mr. Creaser's Remarks, M. and P. Journal, Feb. and April 1806.

causes

causes enumerated page 32-4.---The Vesicle without an areola, takes place if the person inoculated have previously received the infection of the Small-pox, or if he be affected with some other contagious Fever, during the progress of Vaccination.

I observed the co-existence of an irregular Vesicle, and the Vaccine Pustule, in a girl five years old, probably one of those who are not susceptible of the Small-pox. She was first vaccinated without any perceptible effect, although six children of the same family had the regular Vaccine Disease by means of fluid taken from the person from whom she was vaccinated. The little girl was again vaccinated in both arms, about two months afterward, when she had the Vaccine Pustule from the puncture in the right arm, and from that in the left, a Vesicle without any areola, and of an irregular form, one side of it being much more elevated than the other. The year following she was inoculated with recent Variolous matter, but did not take the Small-pox.

Professed Inoculators, I make no doubt, have observed other modifications of the inoculated Vaccine Disease. The irregular appearances above described, and represented by engravings, may serve to put those who have less experience, on their guard, and induce them, when

there is any deviation from the regular form and course of the Vesicle, to re-inoculate at a future period.

In Dr. Woodville's opinion, " whenever Vaccine Inoculation excites a pustule of any kind, though it continue but for one or two days, and should be succeeded by an ulcer, the inoculation is as effectual as where the tumour has proceeded in the most regular manner *."---Further experience has ascertained that neither the Vaccine Pustules nor Ulcerations sufficiently protect the constitution from the Small-pox†, yet that in a few instances, matter taken from the Pustule has communicated by inoculation the genuine Vesicle ‡, and that, in some, the Vesicle on the sixth or seventh day succeeded, or took the place of the Pustule ‖, as if the patients had been

* On the Cow pox, pag. 35, and Mr. Ring, pag. 147-8.

† See Mr. Ring, pag. 257, 413-15, 609, &c. Dr. Stokes, Med. and Phys. Journ. Jan. 1801. Mr. Malden's Letter, in Ring's Treatise, p. 620, Mr. Henderson's case, pag. 597-8, and Dr. Fawssett's cases, Med. and Phys. Journal for Aug. 1801, pag. 120. Address of the Royal Jennerian Society, 1803, pag. 41

‡ See Dr. Harrison's Cases, Med. and Phys. Journal for Feb. 1801, and Dr. Sacco's Observations, or Mr. Ring, p. 370 and 941. Dr. Cappe has made the same observation respecting the local pustule or ulcer in Variolous Inoculation. Compare Mr. Dawson's paper in the Med. Transact. Vol. III. pag. 385; and Mr. Kite, Mem. Med. Soc. Vol. IV.

‖ Mr. Ring's Treatise, pag. 668; pag. 370, from Dr. Cappe; and pag. 941, from Dr. Sacco.—I may mention as an analogical fact, that in some cases of

been inoculated from themselves. In the greatest number of cases, however, the Vaccine pustule, on inoculation, produced a pustule of the same kind, and thus laid the foundation for a series of inefficient inoculations *. Dr. Odier began to vaccinate at Geneva, with virus taken on threads from the arm of a nobleman who had previously had the Small-pox. Twenty children were inoculated successively with this matter, and similarly affected. Their arms inflamed within eight

of Variolous Inoculation, there are two successive eruptions. The first consists of large distinct pocks, without fever; in the second, which takes place on the ninth or tenth day after the first, the pustules are small and coherent, or sometimes confluent. With these cases I would rank that of Mr. King's child noticed in the Med. and Phys. Journal for Nov. 1805, pag. 405. and by Dr. Fraser. Instances of a similar irregularity in the eruption of the Measles I have given elsewhere. See Reports on Diseases in London, pag. 106.

* "I have abundant testimony to prove, that the fluid taken from a spurious Vaccine pustule is capable of propagating it's like." Dr. Jenner, Med. and Phys. Journ. Vol. XII. pag. 99, where a striking instance is adduced.

"When a child has a scabby face, especially if it be accompanied with Tinea capitis, or papulous eruptions (Achores?) we frequently find that the purest Vaccine virus will produce a pustule that will never contain limpid matter, but throughout all it's stages it's contents will be purulent. If I inoculate from this source, almost to a certainty I produce a similar pustule. The scab which succeeds is not hard and dark-coloured like the common Vaccine scab, but soft, and of an amber-colour, like that of the Small-pox, and the whole progress of the disease will be accelerated." Letter to Dr. Marcet, Med. and Phys. Journ. May 1803.

hours, and afterwards suppurated abundantly, but with an exudation from beneath a thick crust. Fever supervened, with vomitings, and other symptoms, which, however, ceased in forty-eight hours. Seventeen of these children being afterwards inoculated with Variolous matter, had the Small-pox with different degrees of virulence, and three of them died, having taken the disorder by casual infection *.

The effect of Vaccination, when there are irregular Vesicles (pag. 38-9.) is different in different cases. They appear fully to secure some individuals from the infection of the Small-pox, in others the constitution is but imperfectly † guarded against the Small-pox by these Vesicles, the disease taking place after them, at different intervals, under a particular form‡.---I may add further,

* See Ring, Hist. of Vaccine Inoculation, pag. 412. Compare Rapport du Comité central de Vaccine. " En effet, soit inexperience du comité dans ce genre d'inoculation, soit que plusieurs des enfans, qui lui avaient été procurés des Hospices eussent déjà été atteints de la petite Vérole, la Vaccine avait dégénéré dans ces premiers essais, et les piqûres ne transmittaient plus l'espèce que l'on a appellée Vaccine fausse ou batarde." Pag. 12.

† Dr. Jenner allows the converse of this position: " Although the susceptibility of the virus of the Cow-pox is for the most part lost in those who have had the Small-pox, yet in some constitutions it is only partially destroyed, and in others it does not appear to be in the least diminished." Continuation, p. 165.

‡ Persons thus partially or imperfectly guarded seem only to take the disorder after repeated or long-continued exposure to infection.

that

that when the fluid they contain is used for the purpose of inoculation, it sometimes produces an irregular, and at other times a genuine Vesicle. According to Dr. Jenner, "The Vaccine fluid, even in a pustule (vesicle) going through it's course perfectly, if taken in it's far advanced stages, is capable of producing varieties, which will be permanent, if we continue to vaccinate from it*."

Mr. Mudge's Dissertation on the inoculated Small-pox, affords an instance of an irregular and insufficient form of the Small-pox thus perpetuated. In a series of inoculations, he says, "Thirty were inoculated with crude matter taken from the arm on the fifth day after inoculation, but, though the infection took place so as to produce, in each patient, a very large, inflamed, and promi-

* Med. and Phys. Journal, Aug. 1804; also for May 1803, where, however, the remarks seem to have been misprinted.

Compare Dr. Walker's Statement in the Journal for December 1804.

In Mr. Powell's case (at Chatham), the inoculation had produced one of the delusive Vesicles above described (pag. 39) if Mr. J. Ring's statement be correct. "It arose at the usual period, and had nothing particular in it's appearance, but that it began to die away on the eighth or ninth day, by which time, in general, the Vaccine vesicle has not arrived at it's height. The child took the Small-pox a month afterward. From this patient Mr. Powell inoculated several children, "all of whom were exposed to the contagion of the natural Small-pox, and also were inoculated with Variolous matter, but without effect." Ring's Treatise, p. 599.

nent

nent Pustule, with matter in it, yet not one of them had any eruptive fever, or a single subsequent eruption on any part of the body."------" The matter which was in these pustules, having been used to inoculate others, produced on them exactly the same appearances, unattended also with either fever or Small-pox."------" The whole number being re-inoculated with matter taken after the eruptive fever, the result was that every one of them had the eruptive fever and succeeding eruptions: in short, they had the Small-pox in different degrees, but all in the usual way of inoculated patients*".

Since the Vaccine virus, compared with that of the Small-pox, appears to be more delicate, and more liable to degenerate, or to fail in it's operation from various causes (pag. 31), several practitioners are of opinion that the Variolous is preferable to the Vaccine inoculation, and that it may be conducted with equal safety. I need not at present recapitulate the advantages of Vaccine Inoculation, which thousands have attested†. The salutary effects of this practice, under the proper regulations, being fully established (pag. 11-12), should we now desist from it,

* Pag. 20, 24. Sir W. Watson's experiments on this subject appear to have had a very different result from those of Mr. Mudge. See the Account of a Series of Inoculations at the Foundling Hospital, p. 40-1.

† See Dr. Jenner's Enquiry, p. 58. and the Rev. G. C. Jenner's " Evidence at large."

because

because it is found to require greater nicety and attention than many persons at first believed necessary? A very different conclusion ought surely to be drawn from failures, which were not so much the effects of accident, mistake, or oversight in the early Inoculators, as of inexperience in the business they had undertaken. During the years 1799, 1800, Vaccine Inoculation was practised by ten or twelve thousand persons * in the united kingdom, who had never seen the Vaccine Vesicle before they began to inoculate, nor could be acquainted with its different stages and appearances. The right inference, from the mistakes or failures above stated, and from the nicety of Vaccine Inoculation, is, that only those should be Inoculators who have had a sufficient education, and who have particularly attended to the subject of Vaccination†.

By an obvious collateral inference, we must be led to acknowledge the propriety of a strict examination of the persons inoculated between the 1st of January, 1799, and

* I do not include under this number very many illiterate persons who practised Vaccination at random.

† All the requisite knowledge and experience may possibly be obtained by Clergymen, Ladies, and Country Gentlemen; but as many incidental circumstances will occur, requiring chirurgical attention, the management of Vaccination, with the responsibility, should be generally left to Surgeons—who likewise deserve their reward, since by adopting, and encouraging the new practice, they abandon what has for centuries been the most lucrative part of their profession.

the

the 1st of January, 1802, and the necessity of re-inoculation in every doubtful case*. In cities, and large towns, where medical practitioners have easy access to their friends and patients, the examination might be performed without much trouble, and, if a little address were employed, without exciting much alarm. I believe the scrutiny has, in some places, been already made ; but my wish is, more particularly to impress the expediency of it on surgeons resident in small towns, and districts, remote from the original sources of Vaccine Inoculation. As they must, at first, have often received the fluid circuitously, they could not always be sure respecting its age and state, nor could they, being at that time without experience, know whether the appearances it produced were so decisive, that its effects would be adequate to the intended purpose. I do not by this observation mean to censure the gentlemen to whom it is addressed. Whatever credit we may allow ourselves in the metropolis, for skill, correct information, and local advantages, we must confess that numerous mistakes and failures have occurred with us, some will say, more than in all the considerable towns of England taken together. Practitioners in the country having no resource but in their own sagacity, often acquire as much professional knowledge

* Dr. Stokes, of Chesterfield, has also recommended the inspection and reconsideration of all doubtful cases. Med. and Phy. Jour. for January, 1801. Compare Dr. Faussett's Remarks on the same subject, Aug. 1801.

and

and experience as those who seem to have better opportunities. The most expert surgeon or physician, however, cannot at once see the whole extent of a new mode of practice or a new operation, or ascertain, otherwise than by repeated trials, whether it will be effective in every variety of circumstances and constitution. For this reason, I wish that practitioners throughout the country would, by revising their primary inoculations with a more experienced judgment, take care to ascertain the safety of those who have confided in them, and thus secure their own peace of mind ; for what would their feelings be, if the Small-pox, casually conveyed*, should prove fatal to any of the persons whom they first persuaded to make trial of the new inoculation ?

* This disease appears from time to time in the remotest vallies and townships of Britain, and makes a dreadful ravage. The interval seldom exceeds twelve years. Mr. Bryce informs us that the greater part of the children, in two parishes of Scotland, were vaccinated by persons not of the medical profession, and who were unacquainted with the Vaccine Disease : " The result was, that the Small-pox came among them soon afterwards, and every one thus inoculated was affected with that dreadful disease ; while those few that had been inoculated by persons acquainted with the appearances in Cow-pox, entirely escaped." Pract. Obs. p. 168.

§ IV. ON VARIOLOUS ERUPTIONS SUBSEQUENT TO VACCINATION.

SEVERAL cases of Variolous eruption have occurred, at different periods after Vaccination, in London, and some other places. The practitioners who observed them, have generally reported that the disease was mild, and so modified as often to exhibit an ambiguous appearance. The nature and extent of this modification of Small-pox should, however, be fully understood. The fever which precedes it, is similar in form, and equal in degree, to the fever usually attending the inoculated Small-pox, and the eruption is either papuliform, or tuberculated, without much surrounding inflammation*; see above, page 5: it therefore coincides, in these leading circumstances, with the disease produced, when the Vaccine and Variolous matter, being inoculated nearly together, restrain the operation of each other on the skin (§ I.),--- or when a person, exposed to Variolous contagion, has been inoculated with Vaccine lymph early enough to mitigate the eruption of the Small-pox, but not wholly to supersede it†. I may be allowed to illustrate

* Plate II. No. 1. With this compare Plate I. No. 1 and 2.

† Dr. De Carro, Dr. Sacco, Recueil Periodique, June 1801; and Mr. Ring, pages 158, 263, 269, 312, 464, 513, 568, 640, 692, &c. Dr. Winterbottom,

illustrate a position of such importance by a few examples.

In July 1800, I saw a case of Variolous eruption, 6 months after Vaccine inoculation, and another about Midsummer 1801, ten months after vaccination. In both these cases, there was a considerable degree of fever, but the pustules, which were distinct, small, and hard, began to dry off on the sixth day of the eruption. The subjects of them were infants, who took the Small-pox by infection, and as the cicatrix on the arm, was in both instances very slight, I concluded, at that time, that the Vaccine inoculation had wholly failed.

A third case occurred in the family of Mr. Minton, Banner-square, St. Luke's, which excited much attention. A boy was vaccinated at the age of three months, (March 1802,) by a respectable practitioner, who did not observe any thing particular in the case. Two years afterwards, 4th March, 1804, this child was affected with sickness at the stomach, heat of the skin, headach, and restlessness. The fever continued through the night, and the following day, March 5. In the evening there was an extensive efflorescence, and his parents observed an eruption of red

Winterbottom, Med. and Phys. Journal for April 1802, pag. 297. Mr. Malim's Case, London Medical Review, Vol. IV. pag. 105. Dr. Stokes's Cases, Med. and Phys. Journal, Jan. 1801. Mr. Bevan's and Mr. Watt's, May 1801. Dr. Aberdour's Cases, M. and P. Journal, Feb. 1804, &c. &c.

pimples, chiefly on the neck. On the 6th, the rash had disappeared, but the pimples were numerous on the face, and other parts of the body. On the fifth day of the fever (8th March), some of the eruption became pustular, and was thought to resemble that of the Small-pox, the pustules being indented, having a red base, and containing a whitish fluid. Only a few of them maturated; and a considerable part of the eruption remained hard and papulous throughout the disease. The face and eye-lids were much swollen from the fifth morning to the seventh night, (10th March). On the eighth day of fever, and sixth of the eruption, (11th March) the swelling had subsided, the inflammation had disappeared, the pustules were brown, hard, and dry, and the patient had no further uneasiness. As the eruption, in this case, terminated so speedily, several medical gentlemen were desirous of ascertaining, by inoculation, whether it would produce the Small-pox or some other disease. Accordingly, a sister of the little boy, aged five months, was inoculated in both arms, with matter taken from him, on the seventh day of the disease*. Two days afterwards, a physician, from what motive I know not, inoculated her with the Vaccine fluid. Both the Variolous and Vaccine inoculation proved

* Two other children were inoculated from him about the same time, by Dr. Woodville, and had a full eruption of the Small-pox.

effective

effective on the right arm: the Vaccine Vesicle was distinctly formed on the 6th day, and arrived at its acmè on the 10th*. The pustule which arose from the other puncture, exhibited the usual appearances after inoculation with variolous matter. The child was affected with fever on the eighth day, and there was an eruption of about eighty pustules on the eleventh and twelfth days. These pustules were hard and conoidal: on the thirteenth day, there was a whitish fluid at their points, and a little redness at their bases. Before the end of the fifteenth day, the redness or inflammation had disappeared, and the pustules were become brown and dry. On the seventeenth and eighteenth day after inoculation, or seventh and eighth of the eruption, all the scabs had separated, leaving the usual marks in the skin.

The gentleman who vaccinated Master Minton in 1802, did not recollect, after the lapse of two years, the source from which he obtained the fluid. A distinct cicatrix, about 3-10ths of an inch in diameter, remained on the child's arm. He took the disease by infection, at a

* A slight areola formed round the vesicle, on the sixth day, but it was not apparent on the seventh and eighth. On the ninth and tenth, which were the days of variolous eruption, an oblong areola, two inches in length, inclosed both the pustule and the vesicle.

Mr. Addington, who took very accurate notes, observed some other irregular appearances in this case.

boarding-

boarding-school, to which a child had been brought during convalescence from the Small-pox.

Elizabeth Clark, a distiller's child, in Coppice-row, vaccinated May 1800, with fluid taken on the ninth day, was for some time exposed to the contagion of Small-pox, in September 1804. She had considerable fever for two or three days, and then an eruption of small hard pustules, which became brown and dry so soon, that several medical gentlemen, who saw them, could not believe the eruption was variolous. The child's sister, an infant, was therefore inoculated from her, and had an eruption of distinct pustules with fever. In order to prove that this fever and eruption were variolous, the infant was, two months afterwards, inoculated with variolous matter, and exposed to contagion, but without effect.

The case of Nancy Hodges, Fullwood's-rents, appears to have been similar to that of Elizabeth Clark*. In her sister, Mary Hodges, the pustules were of the chrystaline kind, minute, and indented, and severally bounded by a line of a purplish colour, without any intervening redness. The eruption was, however, extensive, and in many places co-

* See Report of a Medical Committee on the Cases of Small-Pox after Vaccination, which occurred in Fullwood's-rents, Holborn, Aug. and September, 1804. Highley.

herent,

herent, and the fever was, at first, violent enough to excite a considerable alarm among the child's friends. They were agreeably surprised, at the period when the greatest danger was apprehended, to find the eruption dried, and the child playing about the room, free from fever, and from every other complaint*.

Sarah Smith, of Wilderness-lane, near Fleet-street, was vaccinated in 1800, at the age of ten months. October 22d, 1804, she became feverish: an eruption of distinct pustules appeared on the 25th. By inoculation from it, the disease was proved to be the Small-pox. The pustules were acuminated, and did not maturate. This child had been punctured in both arms, but the

* These cases were somewhat similar to two cases stated by Dr. Aberdour, (M. and P. Journal, Feb. 1804, page 132) in which, Vaccination was employed rather too late to supersede the Small-pox by infection, yet, in which, it appears to have mitigated the eruption. A boy, two years old, had, on the eleventh day after inoculation, about eighteen pustules, "all of which died away in a few days, and never put on a purulent form. In his sister, aged seven months, the punctures were, for the first five days, surrounded by considerable inflammation, which disappeared on the 7th day. On the following day, an eruption of the confluent Small-pox appeared on the face and other parts of the body."—"The pustules contained a reddish kind of serum, but none of the brown yellow purulent matter of the Small-pox. Their figure was a medium between the flattened surface of the Vaccine pock, and the conical apex of the distinct Small-pox.——Out of several hundred cases of confluent Small-pox, which I have had occasion to see, this case was the mildest."

inoculation

inoculation took effect only on the right arm, where an irregular and very superficial cicatrix is yet discernible*.

Lydia Smith, an elder sister, vaccinated at the same time, did not take the Small-pox, though she attended on Sarah in the disorder. The mother remarked that Sarah's arm was much less sore and inflamed, in consequence of vaccination, than Lydia's had been.

Mr. Price's child, Clement's Inn-passage, vaccinated by Mr. Cribb, on the 26th of December, 1803, took the Small-pox by infection, in May, 1805. The fever was moderate, and the pustules were small and hard, affording but little matter. The cicatrix from vaccination, in this case, is one-fourth of an inch precisely.—Mr. Flindall's child, Fleet-street, was affected in nearly the same manner, August 1805, having been vaccinated by Mr. Wells, on the 10th of October, 1800, with fluid of the eighth or ninth day. The cicatrix on his arm, is represented Pl. II. No. 3. F.

* This scar is represented Pl. II. No. 3. s. Its largest diameter is six-tenths, the smallest diameter, four-tenths of an inch. The cicatrix on the arm of Nancy Hodges, is four-tenths, of an inch; that of Mary Hodges four-tenths and one-fortieth in diameter. Both of them are depressed and foveolous. The appearance and dimensions of the scars are altered, when the scab, which succeeds the Vaccine Vesicle, has been much rubbed, or torn off prematurely.—S. Smith had, I think, scratched off the top of the Vesicle at an early period.

Two

Two cases of Variolous eruption, four or five years after Vaccination, in which the vaccine fluid employed was taken after the tenth day, are stated by Mr. Ring, Med. and Phys. Journal for August 1805. The pustules on the child (Stokes) at No. 12, Orange-court, contained more matter than I had before observed, but they were not surrounded by inflammation.---About the same time, I saw a child in the Edgware-road, when the pustules were drying. The eruption was nearly like that represented PL. II. Fig. 1. Mr. Ring says, the mother of the child informed him, " that her grandfather and grandmother were inoculated for the Small-pox, and were supposed to have had it regularly, yet that they both afterwards died of that disease."

Some other similar cases occurred during the summer of 1805, in different parts of London*.

Mr. Blair favoured me with the following particulars, respecting a child, Alice Gorthorpe, vaccinated at the Bloomsbury Dispensary, 7th May, 1803. " The appearances were as usual, and a well marked cicatrix was left on each arm. From this child many others were vaccinated. In the beginning of June, 1805, she had an eruption of the Small-pox, attended with considerable

* Medical and Chirurgical Review, 1805.

fever. The pustules were numerous, but small and distinct; they desiccated very speedily. Eleven children who had been previously vaccinated, were in the house with Alice Gorthorpe, but they all escaped the infection, though one of them constantly slept with her during her illness." This is the only case of Variolous eruption, after Vaccination, which has occurred in Mr. Blair's practice. He has vaccinated more than 700 persons.

A little girl, the child of Mr. Jones, Theobald's-road, was vaccinated in the year 1800, by Mr. Wachsel. According to the mother's account, the Vesicles were very large, and the arm was much swollen and inflamed. The cicatrices are at this time large, (See PL. II. No. 1. C.) a little depressed, and foveolous. About the beginning of September, she was exposed to infection, a child in the next room being affected with the natural Small-pox. On Sunday, the 22d of September, she became chilly, languid, and heavy. On the 23d, she complained of heat, headach, and weariness. The eruption appeared on the following day. On the 27th (6th day of the disease, 4th of the eruption), the pustules were small and hard, but without much inflammation: her eyes appeared tender and watery. On the 30th of September, (7th day of eruption,) the child was easy: her eyes were clear. The pustules on her face appeared brown and dry: they had not increased in size, nor

were

were they more inflamed: several of them seemed papulous, without the least tendency to suppuration. On the arms and legs, the pustules were elevated, hard, and of the colour of horn, with very little redness round the base, and with merely a speck of fluid at the top. A drawing was made of some of the pustules on the arm, at noon, October 1st, the 10th day of the disease, and 8th of the eruption*. See PL. II. No. 1.

A child of Mr. Chitty, grocer, in the same neighbourhood, vaccinated by Mr. Drew, 16 months before, had, at the beginning of September, a tuberculated Variolous eruption, with slight fever. Some of the tubercles suppurated partially, others not at all. They were larger than those represented above, PL. I. No. 2 A. and did not subside to the level of the adjoining cuticle, till a fortnight had elapsed. This child received the infection from an elder brother, who had the Small-pox very severely in August, though he had been inoculated with Variolous matter six years before, when the arm inflamed, and sup-

* The particulars of the Vaccination appear in the Register Book of the Hospital as follows:

"Mary Ann Jones, æt. 4 m. 18th Oct. 1800, inoculated with fluid of the 9th day: 2 punctures in left arm.

"23d Oct. 4th day, elevated.

"29th Oct. 10th day, lymph, with regular appearance.

"2d Nov. scabbed."

purated, and scabbed, as usual, but these appearances were not attended with any eruption on the skin. In these cases, therefore, both Variolous and Vaccine Inoculation failed to act on the constitution, and only produced local effects. Mr. Drew remarked in the boy who had been vaccinated, that there appeared round the cicatrix, on the 2d and 3d day of the Variolous eruption, a redness or effloresence similar to that which is usually produced on the 9th or 10th day after Vaccination. —In opposition to the idea entertained by some, that such peculiarities are uniform, or attached to families, Mr. D. wishes to state the following case.

Master Zincke, 3 years old, was inoculated, March 1800, with Variolous Matter, but the inoculation failed. It was twice afterwards carefully repeated, but without effect. At the beginning of May, 1804, having been exposed to infection, he took the confluent Small-pox, which proved mortal. His two younger brothers were vaccinated, the one in July, 1802, the other on the 16th of May, 1804, when Master Zincke's complaint was ascertained to be the Small-pox. Both of them continued several hours, every day, with their brother during his illness, and often slept on his bed, without suffering any inconvenience.

I have seen many other instances of Variolous eruption after

after Vaccination, but as they resembled those above stated, it is unnecessary that I should particularly mention them. On examining the accounts of other writers on the same subject, I find their observations nearly correspond with my own.

The cases inserted in the Med. and Phys. Journal for Aug. 1801, claim the first attention. Two children who, in the opinion of the inoculator, Mr. Stephenson, of Kegworth, "had the appearances and symptoms of the genuine Cow-pox clearly marked," were about six months afterwards inoculated with recent variolous matter. On the 8th day, both the children were feverish; "the pustules on their arms were fully distended with purulent matter, and considerably inflamed around the margins." On the 9th and 10th, the elder boy, aged 8, had "a full crop of eruptions." "The other child's fever was slight. The pustules soon turned brown, and exsiccated, as in very favourable cases of Variola."

Dr. Faussett, in the same Journal, states, that Miss G. Whitworth*, "who was inoculated with Variolous matter some time after Vaccination, took the Small-pox," in a very mild and regular manner."---This young lady had the small irregular Vesicle, described page 39.

* See above, page 38-9.

In

In two children, whose cases are reported by Mr. Bryce*, a favourable kind of Small-pox took place, in one by infection, in the other by inoculation, twelve months after Vaccination. Neither of them had been regularly inspected during the Vaccination. A younger child of the family, in which the second case occurred, was vaccinated at the same time, and had the disease satisfactorily. When these children were inoculated with the virus of Small-pox, the one who had been first inoculated with the Cow-pox, became on the eighth day hot and feverish; on the ninth day he had two fits, which were soon followed by an eruption of Variolous Pustules. The younger child had neither fever nor eruption. Mr. Bryce was informed by the mother and nurse, that the areola of the Cow-pock, on the arm of the elder child, had not proceeded to nearly so great an extent as that on the arm of the infant. These cases, therefore, seem to have resembled those of Sarah Smith and her sister, stated above, page 57.

In Mr. Goldson's first series of cases, we find that, of eight persons vaccinated at different periods, four had distinct Variolous eruptions, from inoculation, and four, by casual infection. Few of the pustules maturated; and Mr. G. remarks, that the eruption dried off about the 5th or 6th day. In Case V, "there were not any eruptions, but a number of

* Practical Observations, &c. page 161---3.

pustules

pustules round the inoculated arm" ; Page 39. In two or three other cases, " the eruptions were mostly small, but prominent" : " none of them maturated, but some exuded a small portion of lymph, which incrusted on the apex, and gave them a warty aspect" ; Pag. 66, &c. &c.

In Mr. Goldson's second volume of cases, No. I. A child, two years after Vaccination, was for two or three hours exposed to the confluent Small-pox. Ten days afterwards, he became feverish, and on the 11th, he had violent convulsions, succeeded by twelve eruptions. " The eruptions did not maturate, but died away on the 5th day, with a warty scurf on the apex."

No. II. " Some of the eruptions were pustular: those which did not maturate were prominent and warty. They died away on the 5th day." This child does not appear to have been affected with much fever. " She had several times before been in the way of infection, but had resisted it." Page 40-2.

No. III. The Vaccine Vesicle had been rubbed off before the end of the fifth day, in consequence of which, the child's arm was sore for several weeks. About sixteen months afterwards, the child was exposed to Variolous infection, and became feverish. " The eruptions (which succeeded)

succeeded) were about fifty in number, and all of them acuminated ; but not more than six or seven of them ever maturated. The rest were horny, and terminated in a sharp apex. Those that did not maturate, went off on the 5th day after their appearance." Matter taken from them produced the Small-pox. Another child of the family, vaccinated at the same time, escaped infection ; Page 45.

No. VII. A child vaccinated Jan. 1801, was inoculated with Variolous matter in April 1804. On the 8th day she had " fever, attended with delirium for several hours, and succeeded by more than 100 eruptions, a few of which only became pustular*."---Page 62.-3.

Nos. IX. X. contain Mr. Bowen's cases, from one of which we learn that Mr. B. after inoculating his daughter three times, without effect, made a fourth trial, "with matter from a confluent natural sort of Small-pox---when a pustule unexpectedly formed, and she had eruptive fever for more than 24 hours, followed by 20 or 30 eruptions, most of which died away in a few days." P. 65.

In the cases of Variolous eruption, after Vaccination,

* Cases V. VI. VIII. are those of Sarah Smith, Mary and Nancy Hodges—stated above, page 54.

detailed

detailed by Mr. Dunning, of Plymouth*, the circumstances are very similar to those above quoted from Mr. Godson. Master Rendell, four years and four months after Vaccination, "was inoculated with active variolous matter, and had a little eruptive fever, with twelve hard pustules." Miss Stewart, inoculated at the same time, though she had previously had the Small-pox by inoculation, was more affected, both with fever and eruption, than Master Rendell.

Miss Hitchings, two years and a half after Vaccination, "was some time fully exposed to a malignant and fatal Small-pox," at Stoke. She had, for two days, "such indisposition as is usually precursory of eruptive diseases," when "at least forty eruptions appeared on her, which resembled the small Variolæ in very favourable cases of inoculated Small-pox."

Mr. Dunning observes respecting these cases,—"That Small-pox of the same benign and modified character will sometimes, but indeed very rarely, happen in persons of highly susceptible habits, placed under exposure to a concentrated and epidemical variolous atmosphere, although they had been previously and duly vaccinated, I

* Minutes, page 103-7. and Short Detail, &c. page 23. See also Mr. Goldson, Case IV.

am inclined from some late observations to believe, but, thank God, not to dread." On this principle, he invites Mr. Goldson to "join the vaccine party with his strong forces, and assist in diffusing a national blessing."---We shall perhaps find, through the experience of other practitioners, that the observations of Mr. Dunning and Mr. Goldson virtually coincide, and we need not yet despair of an union in the cause of Vaccination, between these eminent surgeons, whose abilities and active services are so highly esteemed in our two great sea-ports.

I will not repeat the arguments from analogy, which have been employed by several writers, in answer to the opinion that Vaccine Inoculation is only a temporary preventive of the Small-pox.---The supposition does not rest upon either probable or consistent grounds, as the cases of Variolous eruption, adduced above*, took place without any certain order, from five months to seven years after Vaccination. If it be said, that the preventive power of the Cow-pox ceases in some persons at the end of a month or two, while in others it lasts 60 or 70 years, according to the varieties of constitution, the assertion is too vague to admit of an answer.

* Most of the persons mentioned were vaccinated in 1800. This does not prove that the effect of Vaccination is removed in three or four years, but rather confirms a preceding remark, (page 47,) that the circumstances requisite to produce the full effect, were not ascertained in the first year or two of the new practice.

Mr.

Mr. Goldson seems to think some eruptive or contagious diseases, as the Measles, Scarlatina, Chicken-pox, Nettle-Rash, Hooping-Cough, and Dysentery, may, by altering the state of the skin, "remove the security derived from the Cow-pox*."

I have found, on enquiry, that more than half the children above-mentioned†, who took the Small-pox after Vaccination, had been intermediately affected with the Measles, Chicken-pox, Scarlet Fever, Cynanche parotidæa, or Hooping-Cough, but that in the rest there had not been any intervening disease‡.----The changes of constitution produced between infancy and adult age, might, with as much probability, be supposed to remove the effects of the Cow-pox. This, however, is not the case in the natural Cow-pox, nor are adults less liable than children to failures in Vaccination. A young woman, between 18 and 19 years of age, at Mr. Ransom's, Drury-lane, had coherent Small-pox within six months after Vaccine inoculation in the country. The cicatrix on her arm was scarcely visible.

Mary Woodman, vaccinated at Alton, when about 13 years old, was, at the age of 18, in the Small-pox Hospital

* Recent Cases, pag. 124-8.

† Page 51-9.—I have seen, in the whole, about 30 cases.

‡ Compare Dr. Stanger's Observations on this Subject, Med. and Phys. Journal for December, 1805.

for a tuberculated Variolous eruption, with fever. Some patients were inoculated from her, but no matter could be obtained from the pustules after the fourth day. She had not had any febrile disease between the Vaccination and the Small-pox. The Vesicle from which she received the Vaccine fluid, was, she said, surrounded by extensive inflammation.

A servant-girl who attended the children of Mr. Chitty, through the Small-pox (see above, page 59), had been, two years before, vaccinated at Guildford, by Mr. Halliday. While the younger child was ill, she was affected with symptoms of fever for two or three successive days, and had then an eruption, on her arms and hands, of about twelve small hard papulæ, which did not suppurate, but desquamated in two days. Much greater effects than those which appeared in this girl, are often produced in persons who have had the natural Small-pox, especially in nurses, during their attendance on children affected with the confluent form of the disease. Under these circumstances, they experience repeated shiverings, pains in the limbs, nausea, head-ach, and restlessness. An eruption takes place on the face, neck, breast, and arms. It sometimes spreads under the clothes, like the eruption after a blister, considerably beyond the places of actual contact with the exciting stimulus. The Variolous Pustules in these cases,

cases, appear close together, hard, tuberculated, and shining. They occasion great soreness and stiffness of the skin, though they have not that inflammation round them which is usually seen in the natural Small-pox. None of the tubercles wholly suppurate, but a very small quantity of matter* is formed at the top of them, and they do not subside in less than three weeks. The eruption is often attended with inflammation of the eyes, and a painful sore-throat.

The effects produced by inoculating, with Variolous matter, certain persons who have been vaccinated a considerable time before, are not less deserving of attention, than the effects of Variolous contagion in the cases above recorded. The most frequent result of Variolous Inoculation is a small pustule, (PL. I. No. 10.) not attended with disorder of the constitution; but some of the following circumstances and appearances take place after it in particular constitutions†.

1. A Pustule resembling those exhibited PL. I. No. 5.

* This fluid, when inoculated, produces the Small-pox, a circumstance long ago ascertained at the Inoculation Hospital.

† See Dr. Rollo's cases, some of Mr. Goldson's, and Mr. Bowen's, in the Med. and Chir. Review, January, 1805. Also, Statement of Evidence, by the Physicians of the Vaccine-Pock Institution, and Med. and Phys. Journal, for March, 1805.

but

but having, in some cases, a more diffuse inflammation, or efflorescence round it.

2. Slight febrile symptoms, such as a pulse, somewhat accelerated, a whitish fur on the tongue, languor and heaviness, but without any eruption.

3. A red efflorescence on the skin, which continues for a day or two.

4. Febrile symptoms for two days, attended with an eruption of some hard minute pustules*, which usually disappear in three days.

5. In a case at the Small-pox Hospital, the Purpura, or Petechiæ sine febre, appeared on the 7th day after inoculation.

These circumstances and appearances have been repeatedly announced as proofs of the occurrence of Small-pox after Vaccination†; but such inferences against the new practice are not correctly made, nor can they have

* These pustules differ considerably from Variolæ: some of them are like the Papulæ represented PL. II. No. 6; others resemble the minute Pustules delineated PL. II. No. 4. M.

† Mr. Ring's Treatise, page 948. Med. and Phys. Journal, for March 1805, and December 1806, &c. &c.

much

much weight, because we find that similar symptoms take place after the Small-pox, in persons who have been inoculated with Variolous matter, especially in children of an irritable constitution, who have a delicate skin. I quoted above, (page 65,) from Mr. Dunning, an instance of fever and eruption, produced by Variolous Inoculation in a child who had had the Small-pox.

Mr. Miles, a medical gentleman, in inoculating a child for the Small-pox, punctured the back of his own hand with the infected lancet. Four days afterwards, a pustule arose at the punctured place. On the seventh day, this pustule contained matter, and was surrounded by extensive inflammation. The usual symptoms of an eruptive fever began on the eighth day, and continued with violence to the tenth, when Mr. Miles felt on both sides of his face, near the ear, a very unpleasant sensation of stiffness and heat, which presently terminated in an eruption of three or four hard pustules, attended with inflammation. After this eruption the fever ceased*.

Two medical students were affected in a similar manner, but more severely, on scratching their hands, with the scalpel, while they dissected the body of a man who had died of the Small-pox†. All these gentlemen had previously had the Small-pox: Mr. Miles had also been much engaged in attending persons labouring under that disease,

* See Dr. Jenner's Continuation of Facts, &c. page 38.

† Mr. Ring's Treatise, Vol. I. pag. 949.

and

and had inoculated not less than 2000 children. These, with other similar cases on record*, should warn us against the indiscriminate use of Variolous inoculation as a test of the correctness of Vaccination, or for any other purpose.

Some gentlemen with whom I have conversed, maintain that the symptoms, enumerated pag. 69, 70, occur more or less extensively in all cases, according to the time between the Vaccination and the application of Variolous matter, and that at length the constitution would regain the susceptibility of the Small-pox, the preventive power of Vaccine inoculation having been gradually exhausted. I ascertained the incorrectness of this opinion, while I superintended the inoculations to which I have referred, page 15, but I am happy to cite, on the subject, the authority of the Physicians and Surgeons of the Inoculation Hospital, and of the Vaccine-Pock Institution, who have uniformly found that the degree of fever, inflammation, or eruption, in the few cases where they occur, were " not according to the length of time after Vaccination," but depending, in some

* See the cases of Mr. Gardner and Mr. Fewster, in Dr. Jenner's " Further Observations," pag. 117-18; and the letter of Mr. Embling, in Mr. Dunning's " Minutes," pag. 66-8; with Dr. Remmett's and Dr. Woollcombe's observations.—Mr. Gardner has lately informed Dr. Jenner, that, in addition to the symptoms stated by him, there were generally eruptions on the skin, which, however, did not maturate.

persons,

persons, on the state of the constitution, in others, on incidental circumstances*.

I shall perhaps be asked, whether I think that the Variolous eruptions, in all the cases adduced above, (page 51-9), were the consequences of imperfect Vaccination? Vaccine Inoculators were, at first, generally satisfied with any Vesicular appearance, surrounded by inflammation; and even now, I believe, many practitioners would consider the specious irregular Vesicle, described page 39, a sufficient guarantee against the Small-pox, not being aware how frequently it denotes a temporary incapacity to be affected by either the Variolous or Vaccine Virus, (page 34-5.)—I have had reason, on minute inquiry, to conclude that, in a very great majority of the cases which occurred near London, the Vaccination was imperfect†. There is, however, great difficulty in

* "The appearances of the inoculated part depend on the too diluted state of the fluid, or its altered state by keeping—on the kind of wound made in the inoculation,—on the external injury, or irritation by pressure of cloaths, scratching, &c. and on the habit of the object." Statement of Evidence from Trials by Inoculation of Variolous and Vaccine Matter, &c. page 69.

† Mr. Ring observes on the case of Smith, page 55: "It was positively asserted by the mother, that the pustule did not increase to the usual size, nor last the usual time. The patient ought therefore to have been vaccinated again. They did not bring her to me according to their promise, and on account of the distance, I could not see her more than once. When I inspected

in obtaining clear and direct information on the subject, scarcely one private practitioner in ten being able to produce any written note, or memorandum, of the appearances or effects of the inoculation; and even in Public Institutions for gratuitous Vaccination, the medical superintendents often lose the opportunity of ascertaining whether the inoculation has proceeded rightly or not, because the patients fail to attend at the proper times.

the pustule it appeared small but genuine; the areola itself did not exceed the size of a pea." Answer to Dr. M. pag. 216, and M. & P. Jour. June, 1806.

Respecting the child in Orange-court, (page 57) Mr. R. says, "I inoculated her five years ago, at a time when it was not thought of much consequence at what period the matter was taken, provided a pustule resembling the Vaccine pustule took place. Such a pustule took place in the present instance." (Med. and Phys. Journal, 1805, &c. &c.)

Some other Inoculators, to whom I have applied, acknowledge that they at first acted under the same impression, and they have consequently seen Variolous eruptions in a few of their patients, who were vaccinated before the year 1803.—I have not, on this subject, made many enquiries of practitioners at a distance. I will, however, take the liberty of asking Mr. Stevenson, (whose candour seems undiminished by the mortification he must have received from the event of his cases, page 61,) whether the Vesicles, in those cases, might not have been of the irregular kind, described above, page 89. I have no further ground for a doubt respecting them than the words "beautiful, erysipelatous, efflorescence" which for three days, "continued to increase in circumference",—an irregular Vesicle being often more showy than the genuine one.

But

But can it be denied that a Vaccine Vesicle of the most perfect form, after proceeding through the usual stages, has, in some persons, failed to remove the susceptibility of Variolous contagion? I have already given (page 15,) the result of my own experience on this head. If such failures do occur, they must occur in a very small proportion*, and I am convinced that the subjects

* See Mr. C. B. Trye's Observations on this subject, Med. and Phys. Journal for November, 1804. Mr. Trye, from his own experience, asserts, "That whatever has been said against the sufficiency of Cow-pox matter as a security against Variolous infection, may be also said, with truth, against Small-pox matter, as a similar security."

Dr. Jenner also says, "In three districts in the county of Gloucester, embracing a circle of about twenty miles, I can engage to produce a very considerable number of well authenticated cases of Small-pox, which occurred at different periods after Small-pox inoculation. Within the same circles, a larger number of persons have been inoculated with the Vaccine than with Variolous matter, some of them above eight years ago, yet it has never come to my knowledge that a single instance of failure, in the Vaccine inoculation, has taken place, although it appears that thousands of the Vaccinated have been exposed to the Variolous infection, after Vaccination. Cheltenham, Berkeley' and Eastington, may be considered as the centres of the above circles. Within them, a considerable number of well-attested cases of Small-pox, after supposed security from Small-pox Inoculation, have already been made public by professional gentlemen of eminence, as by Mr. Earl, of Frampton, Mr. Fewster and Mr. Scott, of Thornbury; Mr. Wood, of Cheltenham, (in whose narrative appears the melancholy recital of the death of his own sister of confluent Small-pox after inoculation), Mr. Bancks, of Winchcomb, Mr. Jennings, of Chepstow, Mr. Williams, of Dursley, and Mr. Trye, of Gloucester."

of them will not be found liable to take the Small-pox in the same manner and form as before the Vaccination. When only a local effect is produced by inoculating with Variolous matter, the constitution will be affected by the Small-pox at a future period, as much as if no pustule had been formed. This has been confirmed by numerous cases, some of which terminated fatally. Imperfect Vaccination, in which a Vesicle appears without producing the full effect on the skin or constitution, has therefore an advantage over the local inoculated Small-pox, since it affords a limited security against Variolous infection; page 44. That security must be supposed to be greater, the more nearly the form of the Vesicle approaches to the correct and genuine form described in § II*. If, in a few cases, perfect Vaccination does not prevent the Variolous fever and eruption, on inoculation or exposure to contagion, it will at least place the persons, who take the Small-pox, in the same state as those who have been inoculated with Vaccine and Variolous matter about the same time, (§ I.) a state which has hitherto been wholly free from danger.

Mr. Bryce has proposed a test, or method of ascertaining that the constitution is affected by Vaccine inoculation, especially in cases where "the local inflammation is slight, and

* See Appendix, page v.

the

the fever scarcely perceptible." His plan is founded on some experiments formerly made by inoculators of the Small-pox, shewing, " that if the same person was inoculated every day until the fever induced by the first inoculation supervened, all the other punctures quickly advanced in their progress, and that in the course of a day from the time the fever or general affection began, even that puncture which had been last made, perhaps only twenty-four hours before, equalled in maturity the one first made, perhaps eight or nine days before, and from which the fever had arisen. Page 173.

In similar experiments instituted during Vaccination, Mr. Bryce found that, " when a second inoculation was performed, a certain number of days after the first, the affection, produced by this second inoculation, was accelerated in its progress, so as to arrive at maturity, and again fade, at nearly the same time as the affection arising from the first inoculation*; and that this took place although the constitutional affection might be so slight as otherwise to have passed unnoticed."

* When Vaccination precedes, by six or seven days, an inoculation with the matter of Small-pox, it accelerates the progress of the Variolous Pustule, and brings an inflammation round it on the second, third, or fourth day, producing an appearance which very much resembles the Vaccine or spurious Pustule represented PL. I. No. 5. B.—*R. W.*

From

From another series of experiments, page 189, he concludes that the most proper time, for the second inoculation, is about the end of the fifth or beginning of the sixth day after the first inoculation"; Page 206.

Mr. Hugo, of Crediton, has confirmed Mr. Bryce's observations; Med. and Phys. Journal for January 1805. "About the sixth day, when the Vesicle on the inoculated part is formed, or about three days before the areola may be expected to come on, I insert the point of a lancet into the Vesicle, and with the lymph which exudes, I inoculate the other arm. The progress of the second Inoculation is very dissimilar to that of the first. The Vesicle proceeds more rapidly through its stages, exhibiting an areola at the same time as the Vesicle on the other arm, and being, on the ninth or tenth day, in an equal state of forwardness, but more diminutive. I consider this as so decisive a test of constitutional affection, especially in children, that unless it takes place, I never venture to warrant my patients' security against Variolous affection, but advise that the inoculation should be repeated at a subsequent period. Having acted in this cautious manner for several years, and having always taken the Virus at the earliest possible period, I have had the most satisfactory

proofs

proofs of its efficacy, in resisting the contagion of the Small-pox.*"

This test will, however, fail, if the fluid employed be taken from the inoculated person's own arm, when the primary Vesicle is one of the irregular kind above-described, which produces disorder of the constitution, but affords only an imperfect security against the Small-pox.

* See Appendix page 5.

§ V. ON

§ V. ON THE CUTANEOUS, AND GLANDULAR AFFECTIONS, IMPUTED TO VACCINE INOCULATION.

IT has been asserted that Cutaneous Diseases, of a new and singular kind are often the effects of Vaccine Inoculation. These complaints are said to be transferred from the Cow, and to occur, in some cases, immediately on the decline of the Cow-pox, in others, several weeks, or even months after it.—The Mange is certainly transferable, by contagion, from quadrupeds to the human race. I have seen many persons affected by handling mangy cats, dogs, and swine, with a tormenting and unsightly cutaneous eruption, of which I possess very accurate representations*. Horses, asses, and perhaps cows†, are also subject

* These are not inserted in the present Treatise, as they have not any real relation to the subject of it.

† When Cows are too much confined, or kept on improper diet, the hair frequently falls off, leaving bald patches; but the Cow is not so liable to the pustular Mange as the other quadrupeds mentioned.

Mr. Bracy Clark, Veterinary Surgeon, observes; "The Horse-Mange is generally produced in filthy stables, where the grooms neglect to curry and clean the hide of the horse, especially along the mane and down the back to the

subject to the Mange, and occasionally communicate it to those who have charge of them. There is not, however, more affinity between the Cow-pox and the Cow-mange in the quadruped, than between the Small-pox and the Itch or Scald-head in the human subject. The result of the experience of medical practitioners during the last century, has fully assured us that the Virus of Small-pox, when inoculated, conveys only that specific disease. In like manner, the Vaccine Virus, on Inoculation, produces Vesicles of an uniform appearance, without communicating any other complaint. This has been ascertained by numerous experiments made on dogs and other animals, as well as on the human subject*.

I have carefully examined, with different physicians and surgeons, various cases of Cutaneous eruptions attributed to Vaccination. Instead of the Mange, or any eruption communicable from quadrupeds to the human skin,

the tail. This complaint does not require medicine, but is speedily removed by attention to cleanliness.

I have seen the hairs fall off in different places from a horse's skin: scabs are formed over the bald patches, and produce a violent itching. The title Mange is likewise applied to this complaint by stable-keepers. It generally arises from exposure to a current of cold air, in horses that have been previously much heated. Cows being fed on cool diet, and seldom exposed to great alternations of heat and cold, remain free from any disease of this sort."

Letter, 18th March, 1806.

* By Dr. De Carro, and Dr. Sacco, &c.—See Mr. Ring, pag. 913, 940, 1027.

we constantly found diseases, which were known, and have been fully described, by medical writers, more than a thousand years ago, viz. The Lepra, the dry and the humid Tetter, the Prurigo*, the chronic Nettle-Rash, and the Strophulus candidus†; but more especially the Dandriff, the Favus‡, the Crusta lactea, the Scald-head, and the Ring-Worm‖.—Some persons maintain that if the Inoculation of Vaccine Virus does not excite new eruptions on the skin, it, at least, increases the number of the Cutaneous complaints with which we were before acquainted, and renders them more inveterate. My own experience would authorise me to contradict this assertion, but I shall perhaps refute it more satisfactorily by exhibiting the annexed lists, which Dr. Bateman, at my request, extracted from the Register of patients at the Public Dispensary in London:

	Total Number of Diseases.	*Number of chronic Cutaneous Eruptions.*
In the year 1797 . . .	1730 . . .	85
1798 . . .	1664 . . .	82
1804 . . .	1915 . . .	89
1805 . . .	1974 . . .	94

* See Med. and Phys. Journal. Dec. 1804.

† Reports on Diseases in London, pag. 308; See PL. II. No. 6.

‡ PL. II. No. 5. ‖ PL. II. No. 7.

This

This table shews that the proportion of Cutaneous eruptions to all other diseases, was the same before the publication of Dr. Jenner's Inquiry, as in the 6th and 7th year of Vaccination*.

The following observations† by Mr. Charles Brandon Trye, Senior Surgeon to the Infirmary at Gloucester, afford a striking confirmation of the above statement.

1. "A more healthy description of human beings does not exist, nor one more free from chronic Cutaneous impurities, than that which suffers most from Cow-pox, by reason of their being employed in dairies.

2. "The Gloucester Infirmary, one of the largest provincial Hospitals, is situated in a county, in which accidental Cow-pox has been prevalent from time immemorial: many hundreds among the labouring people have had that Cow-pox since the establishment of this Institution, and that more severely than is generally the case in artificial Vaccination; and yet not a single patient, in half a century, has applied to the Infirmary for relief of any

* Nearly the same proportion may be deduced on comparing Dr. Murray's, Dr. Reid's, Dr. Walker's, and my own, Reports on Diseases in London, for the last ten years.

† Med. and Phys. Journal for April 1806. pag. 305.

disease, local or constitutional, which he, or she, imputed or pretended to trace to the Cow-pox. And be it repeated and remembered, that the artificial in no respect differs from the accidental Cow-pox, except in being generally less virulent."

Glandular diseases are usual, and often immediate consequences, both of the natural and inoculated Small-pox. In this respect, the Vaccine, compared with Variolous Inoculation, has a decided advantage, being seldom succeeded by inflammation and suppuration of the glands. Among children of respectable families, I have not seen a single instance of Scrophula, which could be fairly referred to the Cow-pox*. The children of the poor are not affected with glandular swellings, immediately after Vaccine Inoculation, as they frequently are after the Small-pox, Measles, and Scarlatina anginosa. Where Scrophulous symptoms occur one, two, or three years after Vaccination, we cannot surely, with justice, attribute them to it, since impure air, improper food, dirt, confinement, and virulent diseases, such as the Lepra, Scald-head, Itch, and Impetigo, so generally contribute to

* Dr. Jenner says, " Having attentively watched the effects of the Cow-pox in this respect, I am happy in being able to declare, that the disease has not the least tendency to produce Scrophulous affections."

Continuation of Facts and Observations, page 180-1.

the

the production of glandular diseases in the lower class of people* ?

* The print of an ox-faced boy, with other caricature-exhibitions of Scrophulous tumours, and well known Cutaneous eruptions, have been circulated, apparently with the intention of impressing the vulgar with a notion of the dreadful effects of Vaccination. This reminds me of a similar exhibition made by a practitioner in Smithfield, who was aware of the ascendancy which may be obtained over the minds of the weak, the timid, and the ignorant. As a specimen of the efficacy of his remedies, he suspended at his window, the print of a monster, said to have been expelled from the intestines by some newly invented Vermifuge. This singular animal was of a composite order, having the head and neck of a hooded snake, and the body of a wolf, with the feet and tail of a crocodile. It had many admirers among the learned, as well as among drovers and market women, but I never heard that any professional gentleman gave himself the trouble to write a book against the ingenious exhibitor, though he was certainly not less deserving of notice than the caricaturists of the Cow-pox.

§ VII. ON THE CHICKEN-POX AND SWINE-POX.

SINCE the beginning of the year 1800, I have seen 74 cases of the Varicella or Chicken-pox, which were, by many persons, deemed cases of Small-pox after Vaccination. I must observe, on the other hand, that the eruptive diseases after Vaccination, described § IV. which proved, on inoculation, to be Variolous, were at first thought by several physicians and surgeons to have been the Chicken-pox. As the characteristics of Varicella, therefore, seem not fully impressed on the minds of medical practitioners, I will endeavour to describe its appearances, and give a correct representation of them, at particular stages of the disease, by coloured engravings.

There are three varieties of the Varicella, which, from the different forms of the Vesicles, may be entitled the lenticular, conoidal, and globate*.

* In the northern part of England, and in some counties of Scotland, these varieties are denominated the Chicken-pox, the Swine-pox, and the Hives. In the South, both the latter varieties are called Swine-pox.

1. The

1. The lenticular Varicella exhibits, on the first day of eruption, small red protuberances, not exactly circular, and having a flat shining surface, in the centre of which a minute Vesicle is soon formed. This, on the second day, is filled with a whitish lymph, and it then somewhat resembles a miliary vesicle, but is not so prominent, so tense, or so regularly circumscribed: its diameter is about the 10th of an inch; PL. II. No. 8, L. L. On the third day, the extent of the vesicles continues the same, but the lymph they contain becomes straw-coloured. On the fourth day, many of the vesicles are broken at the most prominent part; the rest begin to shrink, and are puckered at their edges. Few of them remain entire on the fifth day, but the orifices of several broken vesicles are closed, or adhere to the skin, so as to confine a little opaque lymph within the puckered margins, M. M. On the sixth day, small thin brown scabs (S. S.) appear universally in place of the vesicles. The scabs, on the seventh and eighth days, become yellowish, and gradually dry from the circumference towards the centre. On the ninth and tenth days, they fall off, leaving, for a time, red marks on the skin, without depression.

The eruption is generally first observed on the breast and back, and afterwards on the face and extremities. As fresh vesicles arise during two or three successive days, and go through the same stages as the first, the duration

duration of the disease is sometimes longer than I have stated above.

2. In the conoidal Varicella the vesicles rise suddenly, and have a hard inflamed border. They are, on the first day of their appearance, acuminated, and contain a bright transparent lymph. On the second day, they appear somewhat more turgid, and are surrounded by more extensive inflammation than on the preceding day; PL. II. No. 9, C. C. the lymph contained in many of them is of a light straw-colour. On the third day, the vesicles are shrivelled; those which have been broken, exhibit, at the top, slight gummy scabs, (S. S.) formed by a concretion of the exuding lymph*. Some of the shrivelled vesicles, which remain entire, but have much inflammation round them, evidently contain on this day, purulent fluid; P. P. Every vesicle of this kind

* Riverius, Prax. Med. Cap. II. De Variolis et Morbillis, observes; "Est et tertium pustularum genus, pueris familiare, et Variolis simile quoad magnitudinem et figuram, sed in eo ab iis distinguuntur, quod Variolæ cum rubore et inflammatione appareant, hæ verò albæ sint, et veluti Vesiculæ seroso humore repletæ, quæ intrà triduum disrumpuntur et exsiccantur.—Id pustularum genus, a nostratibus fœminis, la Veirolette, nominari solet, ab Italis, Ravaglione."

Compare Ingrassias, De Tumorib. Tr. I. Cap. 1. Vidus Vidius, De Crystallis. Astruc on Fevers, pag. 329. Fuller on Eruptive Fevers, pag. 161-3.

leaves,

leaves, after scabbing, a durable cicatrix or pit. On the fourth day, thin dark-brown scabs appear intermixed with others, which are rounded, yellowish, and semi-transparent. These scabs gradually dry and separate, and fall off in four or five days.

A fresh eruption of vesicles usually takes place on the second and third day, and as each set has a similar course, the whole duration of the eruptive stage in this species of Varicella, is six days; the last formed scabs, therefore, are not separated till the eleventh or twelfth day.

3. In the Swine-pox or Hives, the vesicles are large and globated, but their base is not exactly circular; PL. II. No. 10, G. G. There is an inflammation round them, and they contain a transparent lymph, which, on the second day of eruption, resembles milk-whey. On the third day, the vesicles subside, and, as in the two former species, become puckered or shrivelled, M. M. They likewise appear yellowish, a small quantity of pus being mixed with the lymph; P. P. Some of them remain, in the same state, till the following morning, but, before the conclusion of the fourth day, the cuticle separates, and thin blackish scabs (S. S.) cover the bases of the vesicles. The scabs dry and fall off in four or five days.

The eruption is usually completed in three days, but I have sometimes observed a few fresh vesicles on the fourth day; in which case, therefore, the eruptive stage occupied eight days*.

The fever in Varicella commences two or three days before the eruption appears, and it sometimes continues to the third day of the eruption. Its symptoms are, languor with disposition to sleep, loss of appetite, thirst, heat of the skin, occasional flushing of the cheeks, a severe cough, soreness of the throat, a white fur on the tongue, a quick but unequal pulse, pains in the head, back, and limbs, sometimes pain in the stomach and bowels, with nausea, or vomiting of bile. These symptoms are sometimes more,

* Vesiculæ, sub febre mitiore, 2da. jam die, ut plurimùm in dorso, apud alios in facie, nunc, simul, nunc, impetu diviso, discretæ erumpunt et ad pisi magnitudinem, laté circa marginem rubræ, citissimè excrescunt, post nycthemeri ferè spatium, jam seroso replentur ac turgent liquore, nunc pellucido, aquoso, nunc flavo, nunc puriformi, quartâ aut quintâ ferè die rumpuntur, tenuique crustâ obtectæ, hanc ipsam tam citò abjiciunt, ut vix unius hebdomadis, aut minori spatio, jam omnis, (non præservans interim a Variolis) ægritudo terminetur, nec foveas nisi rarò in cute relinquat.

Frank, De Hom. Morbis, Tom. II. *p.* 270

Dr. Frank terms this form of the disease Pemphigus variolodes; but he confesses that the varieties of it, solidescentes, verrucosæ, acuminatæ, & ovales, cannot with propriety be ranked under the genus Pemphigus.

some-

sometimes less violent, but I do not remember to have seen any case of Varicella without some disorder of the constitution*. Infants are often affected with convulsions during the fever, and adults suffer severely. I requested a gentleman, to whom the disease was communicated, at thirty years of age, to describe his sensations, and the symptoms which occurred. His account is as follows:

" February 18th, 1801, Between seven and eight o'clock in the evening, I experienced a slight degree of head-ach, accompanied with heaviness. Supposing that these symptoms arose from a disordered state of the stomach, I took, on going to bed, some tincture of rhubarb.

" February 19th, Felt languid, without any particular uneasiness.

" February 20th, Soon after rising, I experienced a return of heaviness in my head, and tried to remove it by walking for two or three hours, but I came home faint and debilitated. On going to bed, I again took

* Dr. Heberden, however, observes, " These pocks break out, in many, without any illness or previous sign." Med. Transac. Vol. I. pag. 433.

" Varicellæ ut plurimum sine notabili febre erumpunt." Plenck, De Morb. Cut.---Compare Morton, De Febribus, Cap. VI. Frank, Tom. II. p. 269. Mr. Goldson, Recent Cases, pag. 73.

some tincture of rhubarb, which operated gently in the morning.

" February 21st, I experienced considerable lassitude throughout the day. About noon I perceived an eruption, chiefly on my forehead. In the evening my throat was a little sore. On going to bed, I found that many pustules had come out on different parts of my body, especially on the back and chest, and I was then convinced my disorder was the Chicken-pox. I passed a restless night, with great itching, and irritation in the skin.

" February 22d, My throat continued sore. I felt a general lassitude and oppression throughout the day, and had no appetite. I counted 100 pustules on my face and head, and 500 on my body. Rested well till two o'clock, when I awoke very feverish, and continued very restless through the remainder of the night; my throat extremely sore.

" February 23d, Had a violent head-ach, with great lassitude and oppression throughout the day: felt at times very chilly, a sensation I had experienced occasionally ever since the 20th. Took an antimonial pill at bed-time, and passed a comfortable night.

" February 24th, I felt very much recovered; my throat, however, remained a little sore. In the evening I found that the thin cuticle of the pustules had been abraded during the day, and that they were drying up.

The

The lymph in those which were not broken, appeared whitish and opaque.----With this day my complaints terminated."

The eruption usually commences on the breast and back, appearing next on the face and scalp, and lastly on the extremities. It is attended, especially in children, with an incessant tingling or itching, which leads them to scratch off the tops of the Vesicles, so that the characteristics of the disease are often destroyed at an early period. Many of the vesicles thus broken and irritated, but not removed, are presently surrounded by inflammation, and afterwards become pustules, containing thick yellow matter. These continue three or four days, and finally leave pits in the skin. The eruption is usually fullest in the conoidal form of Varicella: I have seen the vesicles close together, or coherent, but seldom confluent*. When they are numerous on the scalp, some of the glands below the base of the cranium are enlarged.

The incidental appearance of pustules among the vesicles, sometimes occasions a doubt respecting the nature of the eruption. Dr. Heberden observes

"The principal marks by which the Chicken-pox may be distinguished from the Small-pox, are,

* Mr. Ring has favoured us with a coloured engraving of the Confluent Varicella, in the Med. and Phys. Journal, 1805.

1. The

1. "The appearance, on the second or third day from the eruption, of the Vesicle full of serum upon the top of the pock. The pustules which are fullest of the yellow liquor, resemble what the genuine Small-pox are on the fifth or sixth day, especially when there happens to be a larger space than ordinary occupied by the extravasated serum. It happens to most of them, either on the first day that the little vesicle arises, or on the day after, that its tender cuticle is burst; a thin scab is then formed at the top of the pock, and the swelling of the other part abates, without its ever being turned into pus, as it is in the Small-pox.

2. "Slight scabs cover the Chicken-pox on the fifth day; at which time the Small-pox are not at the height of their suppuration.

3. "The inflammation round the Chicken-pox is very small, and the contents of them do not seem to be owing to suppuration, as in the Small-pox, but rather to what is extravasated immediately under the cuticle by the serous vessels of the skin, as in a common blister. No wonder therefore that this liquor appears so soon as on the second day, and that upon the cuticle being broken, it is presently succeeded by a slight scab. Hence too as the true skin is so little affected, no mark or scar is likely to be left." Page 430.

To

To these remarks I beg leave to add, that Variolous pustules, on the first and second day of their eruption, are small, hard, globular, red, and painful: see PL. II. No. 4. The sensation of them to the touch, on passing the finger over them, is similar to that which one might conceive would be excited by the pressure of small round seeds under the cuticle. In the Varicella almost every vesicle has, on the first day, a hard inflamed margin, but the sensation communicated to the finger, in this case, is like that from a round seed flattened by pressure.

On the third and fourth day, the shrivelled or wrinkled state of the Vesicles which remain entire, and the radiating furrows of others, whose ruptured apices have been closed by a slight incrustation, fully characterise the Varicella, and distinguish its eruption from the firm and durable pustules of Small-pox. As the Vesicles of the Chicken-pox appear in succession during three or four days, a partial examination will not always discover the characteristic here specified. In order to form a proper judgment, practitioners should inspect the eruption on the face, breast, and limbs, attending more especially to the places in which it was first observed. If the whole eruption be viewed on the fifth or sixth days, every gradation of the progress of the Vesicles will appear at the same time. This circumstance may be added to the diag-

diagnostics of Varicella, as it cannot take place in the slow and regulated progress of the Small-pox.

The globated Vesicles described page 89, not having any resemblance to variolous pustules, distinguish the Varicella from the Small-pox, whenever they appear; for it is to be remembered that these large Vesicles are occasionally intermixed both with the lenticular and conoidal Vesicles of the Chicken-pox.---It may be said that an acknowledged co-existence of different sets of Vesicles in the same person tends to abrogate the distinctions I have made. The Vesicles, however, are, in many cases, all of the same kind, or where they are intermixed, one sort greatly predominates.---I do not contend for the perfect accuracy of nosological arrangement, but I adopt it because it is in many respects convenient. Systems of botany and zoology are useful, yet they have not been yet brought to perfection, for we find some species which break the order of every classification proposed.

§ VIII. ON THE INOCULATION OF THE VARICELLA.

INOCULATION of the Chicken-pox having been seldom practised, a statement of the circumstances and appearances connected with it, will, I trust, be considered of some importance. The son of an eminent surgeon was infected at school, with the conoidal Varicella. On the third day of the eruption, his father inoculated from him two younger children, M. P. and H. P. I will give the result in his own words:

"M. P. aged 7 years, was inoculated (Oct. 23, 1798) by two punctures in her right arm.

"Oct. 24. A slight redness surrounded the punctures.

"Oct. 25, 26, 27. The redness gradually increased, and was attended with a sensible hardness and elevation.

"Oct. 28. The appearances on the arm became much fainter.

"Oct. 30. Thinking the inoculation had failed, I did not inspect her arm again till the 3d of November, when she complained of an itching about one of the punctures. On examining the place, I found it red, elevated, and somewhat hard, with a small Vesicle in its centre.

"Nov. 4. The redness and hardness were much increased, and she complained of a sensation of tingling about the vesicle. Its size was equal to that of a Variolous pustule on the seventh day after inoculation. In the evening, two small red eruptions appeared on her shoulder, and soon became vesicular.

"Nov. 5. The appearance on the arm continued the same, but no fresh vesicles were observed.

"Nov. 6. The redness on the arm was very faint, the hardness and elevation were abated. No further eruption appeared."

"H. P. a boy aged nine years, was inoculated October 23, in the arms, with watery fluid, taken from one of his brother J. P's. Vesicles.

"Oct. 24. The small scratches made by the lancet were discernible, but not inflamed.

"Oct 25. They were scarcely visible.

"Oct. 26. A redness with some degree of hardness and elevation appeared at the places punctured, but subsided again the following day.

"Oct. 30. No vestige remained of the inoculation.

"Nov. 4. On his side there were two small red spots, resembling those which succeed the bite of a gnat. They extended gradually, had an elevation at the centre respectively, and on the 5th, were vesicular.

"Nov.

"Nov. 6. A considerable number of vesicles, with surrounding redness, appeared on his body, but there were not any on his face.

"Nov. 7. He was free from indisposition, and no further eruption took place."

The irregular appearances on the arm, in this case, compared with those in the former case, led us to suppose that H. P. who had been his brother's constant playmate, took the disease, by contagion, before he was inoculated. The little girl being, at the time, confined to the nursery, had very little intercourse with the boys.

For the following cases, I am obliged to Mr. Wachsel, resident surgeon at the Inoculation Hospital.

I. "Elizabeth Beatty, aged 8 months, vaccinated on the 21st of May, 1799, became feverish on the evening of the 23d: on the 25th, she had an eruption of the Chicken-pox, in about 200 Vesicles. Those on the face were dried on the 27th; those on the body and extremities were, on the 28th, distended with clear lymph; but on the 29th many of them appeared dry and scabbing. On the 5th of June, the scabs were separating. She was inoculated, June the 6th, with Variolous matter, in two places, but the inoculation proved ineffective."

II. " Edmund Wilson, aged six months, was inoculated May 28th, with fluid taken from the vesicles of Elizabeth Beatty, by two punctures in the left arm.

" On the 3d day, (May 30), slight elevation, and redness round the punctures.

" On the 5th day, more inflammation ; in the middle of it, shining vesicles, flattish at the top, with an irregular margin. The child had been feverish the preceding night. He was inoculated this day, with Variolous matter, by two punctures in the right arm.

" 7th day, The vesicles larger. Two other vesicles appeared on the left arm near the punctures.

" 9th day, The primary vesicles broken ; they appear blueish at the centre ; there are many small coherent vesicles around them.—On the morning of the 8th, the child was sick ; through the succeeding night he was feverish and restless. Besides those round the punctures, there are twelve vesicles on different parts of the body, some of them rather indurated, others containing lymph. The pustules on the variolated arm are advancing.

" 10th day. The child had a convulsive fit yesterday afternoon. He was feverish through the night, and had an efflorescence or rash over the whole body ; vesicles broken and drying.

" 11th day, Rash continues ; about fifty pustules appeared this morning. Vesicles on the left arm perfectly dry

dry and scabbing. Pustules, at the inoculated places on the right arm, much enlarged, and surrounded by an efflorescence ; (7th day of Variolous inoculation.)

" On the 14th, The secondary variolous pustules are maturating, but they remain indented at the centre : (10th day of Variolous Inoculation.)

" 18th day of the first Inoculation---14th day of Variolous Inoculation—scabs over the places inoculated ; the other pustules drying.

" 22d day of Variolous inoculation ; pustules have been succeeded by scabs ; some of them are separating."

III. " John Coles, aged ten months, took the Chicken-pox by contagion, in July 1799. On the third day of the eruption, he was inoculated from a pustule of the confluent Small-pox.

" On the 9th and 10th he was feverish ; pustule on the arm proceeding as usual.

" On the 11th there were several small pustules round the place inoculated.

" On the 12th an efflorescence appeared on the arm.

" On the 13th and 14th there was an eruption of about 200 pustules.

" 18th, The pustules had all suppurated.

" 20th, Inoculated part covered with a scab ; pustules drying.

Some

Some of the vesicles of the Chicken-pox contained yellowish lymph till the 3d day of Variolous inoculation."

IV. " Eliz. Barnett, aged seven months, was inoculated 2d August, 1799, by two punctures in the left arm, with lymph of the Chicken-pox taken from T. J. Coles, and at the same time, by two punctures in the right arm, with Variolous matter.

" 4th day. Both inoculations appeared effective. The variolated arm was most elevated and inflamed.

" 9th day. Pustules on the right arm contain matter. Vesicles on the left arm proceeding very slowly. The child was feverish during the night.

" 11th day. Efflorescence round the Pustules on the right arm: a few pustules on other parts of the body: Vesicles on the left arm, small, but turgid with lymph.

" 14th day. Has about 300 variolous pustules: Pustules on the arm fully maturated: Vesicles on the left arm drying: no vesicular eruption.

" 16th day. Pustules on the arm drying; the secondary pustules filled with matter.

" 18th. Pustules on the face drying.

" 25th day. All the pustules scabbed."

In these cases, the following particulars deserve attention.

1. The Varicella, occurring soon after Vaccination, did not

not, in Elizabeth Beatty, appear to retard the progress of the Vaccine Vesicle, which was of the usual size, and surrounded by an Areola on the 10th day.

2. In Edward Wilson, the fever produced by the inoculated Varicella seems to have accelerated the fever and eruption of the Small-pox, since febrile symptoms, attended with convulsions and a rash, took place on the 5th and 6th day of the Variolous inoculation, and an efflorescence surrounded the punctured places on the 7th day, when the pustular eruption was completed.

3. In the case of T. J. Coles, Variolous matter inserted during the eruptive stage of the Chicken-pox, produced the Small-pox, at the usual time, and in the usual form.

4. In the last case, where the virus of Small-pox and that of the Chicken-pox, were inoculated at the same time, the Variolous inoculation proceeded as usual, but it seems to have impeded the expansion of the vesicles on the left arm, and to have wholly prevented the eruption of the Chicken-pox.

CONCLUSION.

IN appreciating the advantages of Vaccine Inoculation, our views should be directed beyond the mere expediency of substituting Vaccination in place of the inoculated Small-pox.—A general plan for extirpating the Small-pox, and for preventing its future diffusion among us, surely merits consideration much more than any palliative method of superseding this disease, or of mitigating its severity.

Government has lately established a "Board of Health, to prepare and digest rules and regulations for the most speedy and effectual mode of guarding against the introduction, and spreading of infection, and for purifying any ship or house, in case any contagious disorder shall manifest itself in any part of the United Kingdom, notwithstanding the precautions taken to guard against the introduction thereof; and to communicate the same to all magistrates, medical persons, and others, his Majesty's subjects,

subjects, who may be desirous and may apply to be made acquainted with the same*."

While we defend ourselves against the introduction of pestilential diseases from the Mediterranean, or of the yellow Fever from America, we supinely preserve among us a contagious distemper, originally exotic, which has been destructive†, beyond all others, for more than a thousand years past. I have stated in another work‡, the various means by which contagion is communicated, and have shewn, how rapidly the Small-pox, Scarlet-fever, and Measles, are diffused through populous towns, and how often they extend from thence to distant parts of the country. Those who attend to the particulars of the statement, will, I think, acknowledge that these contagious febrile disorders might be suppressed by municipal or parochial regulations, without much difficulty, and without any material injury to individuals.

The necessity of some general plan for extirpating the Small-pox from our Islands, and for preventing the future introduction of it, does not seem to be superseded by the

* London Gazette, Council-Office, Whitehall, May 28th, 1805.

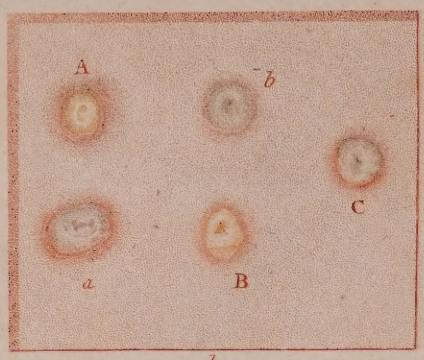
† See above, page 29.

‡ On Cutaneous Diseases, page 390.

new Inoculation. Dr. Jenner's discovery would, however, greatly facilitate the execution of such a plan, and would insure its ultimate success. It cannot be completed by the exertions of an individual, nor by the agency of private societies, but will require the interposition of Parliament. Many of the members of both Houses have strongly interested themselves on the subject; and Government is ready to afford the requisite assistance. These united endeavours, exerted, on the one hand, by restraining the diffusion of the natural Small-pox, and on the other, by giving every encouragement to the practice of Vaccination, will assuredly confer an inestimable benefit on the inhabitants of this kingdom, and on those of every country upon earth.

EXPLANATION

VACCINE INOCULATION.



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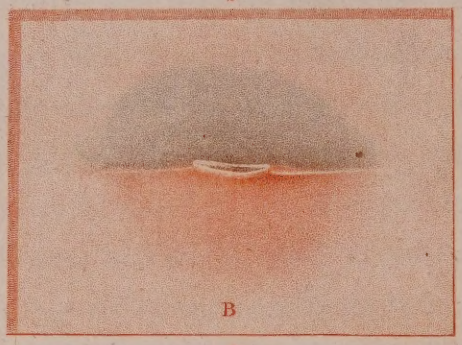

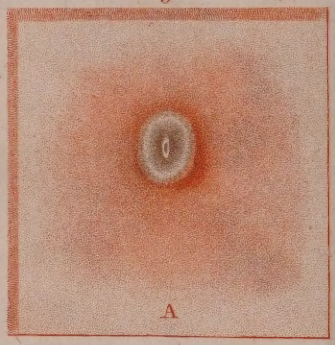

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EXPLANATION OF THE PLATES.

PLATE I.

No. 1. Exhibits Variolous Pustules, and Vaccine Vesicles, contracted, and without the usual Areola, under the circumstances mentioned, § I. pag. 4, (Note) and pag. 50.

No. 2. The Horn-pock and papulated Small-pox ; pag. 5, 50, 53, 59, &c.

No. 3. A Variolous Pustule near the Vaccine Vesicle, and another Pustule within the margin of the Vesicle; see pag. 6 (Note), 4, 8, 50.

No. 4. Perfect Vaccine Vesicles, as they appear on the 10th and 12th day, with the edge, viewed horizontally, pag. 9, 10, 76.

No. 5. Vaccine (spurious) Pustules, pag. 36, 40, 42, 43, 69, 77 Note.

No. 6. A small, irregular, and insufficient Vesicle, pag. 39, 41, 44.

No. 7. Large, irregular, and insufficient Vesicles, pag. 39, 41, 44, 45, 73-4.

No. 8, 9, 10. Appearances on Variolous Inoculation in persons who had been vaccinated two or three years before, pag. 15, 69.

PLATE

PLATE II.

No. 1. Variolous eruption, four years after Vaccination, pag. 59, 57, 50, 70.

No. 2. Represents the distinct, and coherent, forms of the Natural Small-Pox, pag. 5, 59.

No. 3. Various Specimens of the Cicatrix remaining after Vaccine Inoculation, pag. 10, 51, 56, 58.

No. 4. Appearance of Variolous Pustules on the 2d and 3d day of eruption, pag. 95.

No. 5. The Pustules, and Scab, of the Favus, pag. 35, 43, 82.

No. 6. Represents a Papulous eruption, which sometimes occurs during Vaccine Inoculation, pag. 10, 70, 82.

No. 7. Area, or Ring-Worm of the Scalp, pag. 35, 82.

No. 8. Lenticular Varicella, pag. 86.

No. 9. Conoidal Varicella, pag. 87.

No. 10. Globated Varicella, pag. 89, 96.

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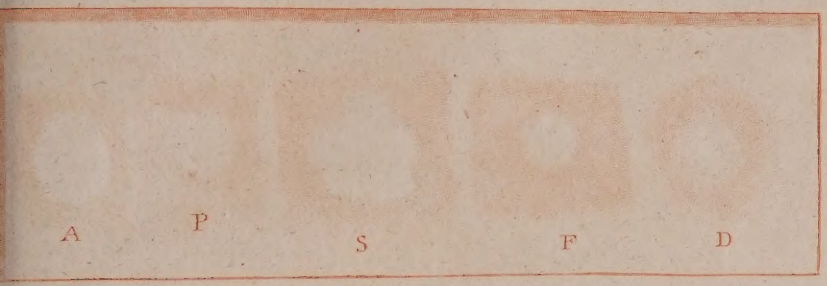

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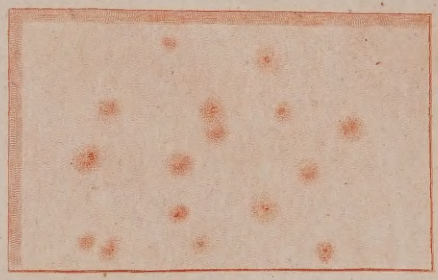

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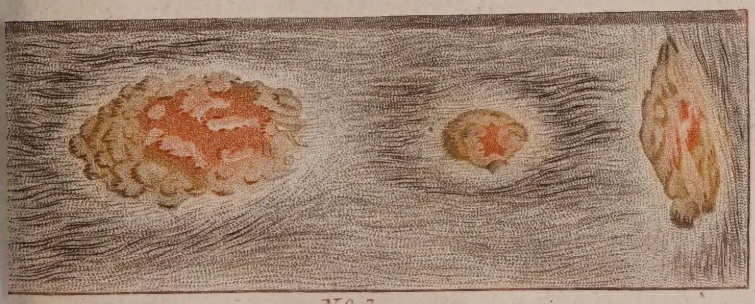

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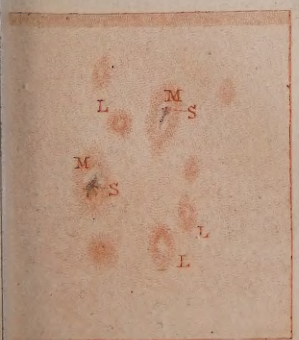

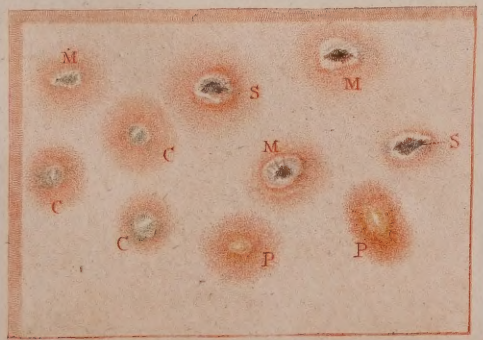

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L.L. Sudlow, sculpt.

APPENDIX

No. I.

EXTRACT OF A LETTER FROM DR. JENNER.

Cheltenham, 23d Feb. 1806.

IT is lamentable to observe, that the past year should have shewn an increase in the deaths by Small-pox in our metropolis, while in some cities, and wide extended districts on the continent, both of Europe and America, we find this destructive disease is already become nearly extinct by the general substitution of the Vaccine, for Variolous Inoculation. Time and experience now allow me to draw the following conclusion from the history of Vaccination in our own country,—that wherever it has been much practised, there the Small-pox is least seen among the inhabitants, and wherever it has been universally practised, there it is not seen at all, and if brought by accident, that it does not spread. This place, which is very populous, affords a strong example of the truth of this assertion. The Small-pox has been brought into it no less than seven times, during the last summer and present winter; but in every instance it was confined to the individual on whom it first appeared, a circumstance unexampled in the history of this

town, previously to the introduction of Vaccination*. A considerable number of children and adults, who were vaccinated by me some years ago, thus became exposed to the infection of the Small-pox, some accidentally, and others on purpose. Several were vaccinated while living under the same roof with the Small-pox patients, and some who had been previously exposed to the infection several days. A memorable instance of the preservative effects of the Cow-pox under this circumstance, I shall presently select; but I will now proceed to answer your questions in the order in which they are placed before me.

I. With regard to general statements, almost every part of the civilized world has produced abundant testimony of the safety and efficacy of the Vaccine Inoculation; but no quarter of the globe has afforded so great a number of facts on this subject, as Asia. I have from time to time received the most agreeable accounts, from many of the first medical characters resident in the British provinces in India. These added to the several communications with which I have been favoured by the Hon. General Wellesley, brother to the marquis, and by many other officers, and gentlemen of distinction, lately returned from India, allow me to reckon THERE at least 880,000 cases of Vaccine Inoculation†.

* While Cheltenham has had this immunity from the Small-pox for several years past, a neighbouring city, Gloucester, where Vaccination, (notwithstanding its firm support by Mr. Trye, still meets with cold indifference,) has been almost constantly harassed by the disease.

† See the observations published by Dr. Anderson at Madras; Dr. Keir, Dr. Helenus Scott, and Dr. Muir at Bombay; Mr. Shoolbred at Calcutta; Mr. Christie and others at Ceylon.

II. Vacci-

II. Vaccination gives complete securityto the constitution, when no indisposition has been perceptible throughout the whole progress of the pustules on the arms. I once had some doubts on this point, but I am now, and have been for many years past, perfectly convinced they were groundless.

I will here digress for a moment, just to observe to you, that much constitutional affection frequently appears when the irregularity in the progress of the pustule, is such as to convince me that the patient is not in a state to receive perfect security. This is sometimes observable among those children, whose skins are in an herpetic state. For an example, I refer you to a paper of mine, on the subect, in the Medical and Physical Journal for August, 1804.

III. The absence of the Areola is so rare an occurrence, that I can say nothing perfectly decisive upon it. Out of the last 3000 punctures, I have not noticed its being wanting, except in one instance. As this was attended with a singular coincidence, I will relate it to you.

Charles Hooper, six months old, was vaccinated under the following circumstances.—On Friday, the 27th of December last, its mother, a young woman of this place, was seized with the eruptive fever of Small-pox. The disease was communicated to her by some itinerants passing through the town about a fortnight before. Eruptions began to appear on several parts of the skin the day after the seisure,—unusually early. On Wednesday the first of January, and the fifth day of the eruption,

I went to see her, and found her covered from head to foot with coherent Pustules, which were maturating in a favourable manner. By her side lay the infant I mention, into whose arms I inserted the Vaccine fluid taken from a patient on the spot. Three punctures were made on the arms, and all went through their course completely, *except that no Areola appeared about either of them.* However the infection of the Small-pox, which must have been received long before the insertion of the Vaccine matter, was perfectly arrested in its progress and rendered harmless. No Pustules appeared on the child, except those on the arms excited by the punctures, nor had it a moment's indisposition, although it lay with its mother, (who recovered after a hard struggle) during the whole continuance of her disease. [See above, p. 41, and p. 34, Note.]

IV. To answer this question* in its full extent, would lead me through a wide field of observation, in which I mean to expatiate at a future time: but the following answer may probably convey to you as much information on the subject, as you may now require.

Vaccination, under the circumstances you mention, usually produces a striking deviation from the character of the Vaccine Pustule (Vesicle), at some period or another of its progress, but more frequently in its early than in its declining stages; indeed it is commonly perceptible in a day or two after inoculation. It would be difficult, perhaps impossible, with-

* *Qu.* What are the changes produced in the Vesicle, when a person is affected, during Vaccination, with the Shingles, the Vesicular Ring-Worm, or Impetigo?

out

out the aid of drawings, to give a correct description of the varieties, which an herpetic state of the skin is capable of producing, from those trifling deviations which prove no impediment to the Vaccine security, up to that point of imperfection in the Pustule, which affords no security at all. In saying *no security at all*, perhaps I commit an error; for it strikes me that the constitution loses its susceptibility of Small-pox contagion, and its capability of producing the disease in its perfect and ordinary state, in proportion to the degree of perfection which the Vaccine Pustule (Vesicle) has put on in its progress; and that the Small-pox if taken subsequently, is modified accordingly*. When no deviation takes place in the ordinary course of the Vaccine Pustules, or when it is inconsiderable, the herpetic blotches or vesicles, of whatever kind they may be, often assume (sometimes as early as the third or fourth day after the the insertion of the Vaccine fluid,) a new character, not unlike the Vaccine, and keeping pace in their progress with the pustules on the arm, die away with them, leaving the skin smooth. I have seen, in some infants, an eruption spread from behind the ears, to the cheeks, during the progress of the Vaccine vesicle; but it may be doubted whether this was not a coincidence from natural causes, as you well know we sometimes witness such appearances entirely unconnected with vaccination. In these cases, I employed, with a speedy good effect, a pretty strong solution, in distilled water of the Aqua-lytharg. Acet. or of the Cerussa Acetata. [See my paper in the Medical Journal above alluded to; Mr. Simpson's evidence before the Committee of the House of Commons; Dr.

* This opinion, or one not much unlike it, was I believe, first published by Mr. Dunning of Plymouth.

Wood's, Mr. Hill's, Mr. Dunning's Observations, in the Medical Journal, and some other corroborating facts interspersed through that work.]

What appearances the *variolated arm* puts on when the skin is affected with irritative eruptions, I have not an opportunity of ascertaining; but it appears to me as very probable, that the distinction between the correct and incorrect state, must be more obscure than in the vaccinated, because in the latter, it is the purulent pustule, which terminates in a soft scab, that we deem imperfect; and in the former, whether perfect or imperfect, it is always purulent, and always ends in a scab of this description. Hence there is a manifest superiority, under the two modes of inoculation, in favour of the Vaccine, considering them in this point of view. For we have only to subdue the cuticular disease which occasions the impediment (a thing often to be accomplished with great facility by the means pointed out by yourself and others,) and re-inoculation then succeeds completely. A case in illustration of this fact, you will find in the paper above-mentioned in the Medical Journal.

That the Small-pox Inoculation, like the Cow-pox, sometimes fails when the skin is at the same time diseased, I have abundant facts before me to prove. I shall select one for your observation.

Thomas Church, son of Thomas Church, carpenter, at Berkeley, was inoculated by Mr. Williams, (late a surgeon of eminence at Dursley, in this county, and a very experienced inoculator, but who has now retired from business) with a party of near

near twenty other young persons. Nothing very particular was observed during the progress of infection, except that his arm inflamed early and with more than ordinary violence, maturated, and was several weeks in healing. He sickened about the usual time, and had eruptions, which were considered as variolous, but whether they maturated or not, I cannot ascertain. After the lapse of four years, on being exposed to the Small-pox, he caught the disease and had it severely. This youth was, from his infancy, affected with Tinea capitis, and a pretty constant succession of blotches about his face and different parts of his body. His head was now well, and his skin nearly free from any eruption. That the disease he caught, four years after the inoculation, was really the Small-pox, there could be no doubt, as several children were inoculated from the pustules, who had it correctly.

I have often been astonished at seeing how small, and apparently how trifling, a local affection of any part of the skin, is capable of occasioning derangements in its action in parts at a distance, although its disordered state be of such a nature, as not to be discernible by the eye. For example; a small excoriation behind the ear—two or three vesicles, even though of cotarrhal origin*, on the lips or about the nostrils—a few scurfy spots on any part of the body—and even those vesicles, and the subsequent state of the skin, that are produced by external injury, (as I lately witnessed on vaccinating a boy whose face was injured by the explosion of gun-powder), ap-

* Herpes Labialis; see Rep. on Diseases in London, pag. 6.

pear

pear as capable of producing irregularity in the progress of the Vaccine Vesicle, as more extensive cuticular affections. Vaccination, when these maladies are present, seems to shew, that the whole surface of the skin is influenced at the same time, but in separate portions; for on one arm I often produce a perfect Vaccine Pock, and on the other, from the insertion of portion of the same virus, one that is imperfect, and which would afford no security. Indeed, on the same arm within the space of an inch from each other, there will often be this difference in the appearance of the pocks—one putting on the perfect character, and the other deviating so widely, as to resemble more nearly that of an herpetic vesicle, accompanied with inflammation, and commonly ending in a soft, ember-coloured, or blackish scab—and sometimes, especially if it be much disturbed by scratching, in ulceration. The probability then is, that the skin, at the point of insertion, is sound and in its natural state in the one instance, and diseased in the other, but not so, as I have before observed, as to be perceptible to the eye*.

V. I have not seen a person vaccinated while affected with syphilitic eruptions, but I think it proper to mention, that the suppurative Itch, deranges the progress of the Vaccine Pustule, like the other Cutaneous Diseases, to which it bears a resemblance.

* Respecting the principle, by which the human frame, when under the influence of Herpes, is often rendered insusceptible of the *contagion* of Small-pox, I have an hypothesis more rational I think than any that has yet appeared, which, at some future day, I intend submitting to public consideration.

No. II.

GENERAL OBSERVATIONS ON THE COW-POX,

BY JOHN PEARSON, ESQ. F. R. S. SURGEON TO THE LOCK-HOSPITAL AND TO THE PUBLIC DISPENSARY.

I. THE period at which Vaccine inoculation appears to have taken effect.

The signs of infection are generally evident on the arm on the third day; but in one instance, the marks of the puncture disappeared, and I concluded that the inoculation had failed. On the tenth day, being desired to visit the child, I found the inoculated part beginning to inflame, and it passed through its several stages with regularity. In another instance, where the inoculation was performed by a gentleman who assisted me at the Dispensary, in Carey-street, the inflammation did not commence till the twentieth day after the insertion of the fluid.

II. The period at which the efflorescence appears.

The usual period at which this characteristic mark of Cow-pox appears, has been said to be on the ninth day after the inoculation. I have more commonly observed it to take place on the tenth, eleventh, or twelfth day: the earlier, or later appearance of the efflorescence, seems to depend on the comparative vigour of the patient's constitution.

III. Of some local and constitutional effects, depending on the mode of inserting the fluid.

When the inoculator makes an incision into the true skin, or when he makes several parallel and transverse incisions in the same place, the inoculated part inflames violently at the period of the efflorescence, and this inflammation often extends from the shoulder to the elbow. The child becomes extremely ill; large erythematose appearances take place on the arm, fore-arm, the neck, the side, and even on the lower extremity of the side where the Vaccine fluid was inserted; and a fortnight or three weeks will sometimes elapse before the child can be considered free from all danger. Where such an improper mode of inoculating is discovered early, a great part of the mischief may be prevented by applying the Vegeto mineral water with a little spirit of wine, to the inflamed part about the ninth day, and giving the bark very freely. When I have not seen the patient till the erythema and symptoms of irritation had come on, I have directed the affected part to be fomented frequently with hot port wine, and have administered bark with aromatics every three or four hours. This mode of treatment has always succeeded in giving immediate relief, and finally in curing the patient. Where the pain has prevented sleep, I have given the child opium.

IV. Of the safety of Vaccination, and its power in resisting the contagion of Small-pox.

I have inoculated a considerable number of children in my private practice, since the year 1800, and I have superintended the inoculations which have been performed at the Dispensary

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in Carey-street, since that period. I can assert, with great satisfaction, that not a single accident has occurred to me, either of sore arms, general disease, or any other attendant, or subsequent unpleasant symptom. In one instance, where a child was inoculated in Carey-street, in the improper manner I have mentioned, I immediately predicted the effect of it, and by the timely interposition of proper treatment, the more painful and dangerous consequences were prevented.

I have had no experience in my own practice, of the Small-pox succeeding to the Cow-pox. Several of the children whom I inoculated with Vaccine fluid, and who passed regularly through the disease, have been exposed to the contagion of Small-pox, by inoculating them with Variolous matter, and allowing them to have free intercourse with children full of the Small-pox; but in no one instance has that disease been communicated to any of them. I have likewise inoculated a child with Variolous matter, who had been infected with the Cow-pox, by inoculation, five years before, without producing the Small-pox, either generally, or locally. The Variolous matter which I employed in all my experiments, was in a recent and fluid state, the child labouring under the Small-pox, and that which was the subject of the experiment, being in the same room, at the time of inserting the Variolous fluid.

Vaccine Inoculation will likewise take effect, when the constitution does not appear to be susceptible of the Variolous contagion. I inoculated a young lady, twice, at a considerable interval, with variolous matter; she also exposed herself freely to the infection, by playing with a child covered with Variolous pustules, but she was not at all affected. I then inoculated

her with Vaccine fluid, and she passed regularly through the Cow-pox.

I was consulted for a young lady who had been inoculated six times, at long intervals, with Variolous matter, and who had resisted the infecting power of that fluid. I advised, that she should be inoculated with Vaccine fluid; which was accordingly done, and she passed regularly through the usual process.

V. Of Re-inoculation with the Vaccine fluid.

I have made several experiments, in order to ascertain whether a person be susceptible of the Cow-pox, by inoculation, more than once, but I never succeeded in producing the disease a second time. In some of the instances, no pustule was formed; and in others, a spurious pustule arose, which differed so evidently in its appearance, mode of progress, and period of duration, from the genuine pustule, that no person accustomed to see the Cow-pox, could have easily mistaken it. They very much resembled the pustules which are produced by Vaccine inoculation performed on a person who has passed through the Small-pox. The spurious pustule which arises from a second inoculation, has, sometimes, an areola round it; but this efflorescence appears at an earlier period, and does not occupy so large an extent of surface as the genuine pustule.

Since the Cow-pox produces but little disorder of the constitution, and is not attended by an eruption on any part of the body,

body, except that to which the infectious fluid is applied, it would be very desirable to have some criterion, by which we could be assured that the inoculated person has undergone that inexplicable change which secures him against the Small-pox.—In the early part of the year 1801, I ascertained, that, if a second inoculation with Vaccine fluid be performed on the sixth or seventh day after the first, a pustule will arise, which proceeds in the usual manner, until the efflorescence appears round the pustule produced by the first inoculation: and that, as soon as this takes place, the second pustule begins to fade, and, two or three days afterward, disappears altogether. On mentioning this, as a test of the specific action of Vaccine fluid on the constitution, it was suggested, that a proposal of this kind might diminish the confidence of the public in the new inoculation. I acquiesced in the objection, and did not attempt to introduce this mode of practice. The fact may, however, be worthy of being recorded.

No. III.

REPORT ON THE PROGRESS AND PRESENT STATE OF VACCINE INOCULATION IN LIVERPOOL, AND SOME OF THE NEIGHBOURING TOWNS, IN ANSWER TO CERTAIN QUESTIONS PROPOSED TO J. RUTTER, M. D. PHYSICIAN TO THE LIVERPOOL DISPENSARY.

QUESTION I. Have you any general Report from the beginning of Vaccination to the present time, or can you make an estimate of the whole number vaccinated in your populous district?

In answer to this question, it is necessary to mention, that no Report whatever has been made, up to the beginning of this year, of the progress of vaccination in this part of Lancashire. The information which is subjoined in reply to the queries proposed, has been obtained by personal enquiry from a very considerable number of professional gentlemen in Liverpool, and by correspondence with respectable practitioners in the different towns to which these inquiries have been extended. The candid and liberal manner in which all the gentlemen, to whom I have applied, have answered my inquiries on this subject, and the pains which some of them have taken to collect the facts in their respective places of residence, demand a public as well as a private acknowledgment.

The first attempt to introduce the practice of Vaccination into Liverpool, was made on the 3d of April, 1799, by means

of

of a thread imbued with vaccine virus, transmitted to me by Dr. Pearson, of Leicester-square, London; but it failed, most probably in consequence of exposing the virus to too high a temperature in softening the thread. No farther trial was made until the 8th of February, 1800, when Mr. Dale succeeded with matter sent to him by Dr. Jenner. This was the commencement of Vaccination in Liverpool. The practice was immediately adopted and encouraged by Mr. Park, Dr. Lyon, Dr. Brandreth, the late Dr. Currie, and other respectable practitioners, and it was afterwards introduced into the Dispensary. Its progress, however, was at first but slow, until the month of November 1802; when the physicians and surgeons of the Dispensary, by an advertisement inserted in the public papers, and circulated in the town (of which advertisement, a printed copy is inclosed) proposed a general Vaccination of the children of the poor,—which measure was supported by a similar offer on the part of the physicians and surgeons of the Infimary.

The effects of this measure are as follow:

Number of patients vaccinated at the Liverpool Dispensary previously to the month of November 1802, about				300
1802, November	10	to	December 31	157
1803, January	1		December 31	1084
1804, January	1		December 31	540
1805, January	1		December 31	814
Vaccinated at the Work-house under the care of the Dispensary - - - - -				80
			Total	2975

At

At the Infirmary, very few applied for Vaccination, for the sick poor of the parish of Liverpool, fall almost exclusively under the care of the Dispensary.

The number vaccinated in private practice in this town and its vicinity, cannot be ascertained with great correctness, because some gentlemen have kept no register of their patients. From the returns which I have received, amounting to 4143, a tolerably fair estimate may be formed of the amount of the whole, which, I am persuaded, cannot be less than 4300.

The whole number vaccinated in Liverpool and its vicinity, in public and private practice, may be stated, in round numbers, at 7280.

If it be admitted, that not more than 1000 individuals were vaccinated in Liverpool before the year 1802, which, I suppose to be a fair admission, then it will be easy to find what proportion of all the children born since that time have been vaccinated. From the bills of mortality, it appears that from the 1st of January, 1802, to the 1st of January, 1806, the number of births in the parish of Liverpool has been 13,606. If then from the whole number stated above to have been vaccinated in Liverpool and its vicinity, viz. 7280, be deducted 1000, supposed to have been vaccinated previously to 1802, and 277 vaccinated in the neighbourhood, out of the parish of Liverpool, it will follow, that 6000 of the children born in the last four years have been vaccinated, or nearly one half. It is true that there were some adults in the number mentioned to have been vaccinated at the Dispensary, but the instances were so few, that they do not deserve to be taken into the account.

According

According to the testimony of Mr. Myers, surgeon of Prescot, the whole number vaccinated in that town, and its vicinity, amounts to at least 3000.

In Warrington, and its vicinity, I am informed by Mr. Kendrick, surgeon, that 4000 have been vaccinated, of which number about 2500 were vaccinated from motives of humanity, by persons unconnected with the profession.

Mr. Watkinson, of Ashton, surgeon, informs me, that Vaccine Inoculation has been so generally practised in that town and neighbourhood for six years past, not only by the medical gentlemen, but also by ignorant country people, and by parents inoculating their own children, that it would be impossible to make a calculation of the number vaccinated in that period. He, however, believes that three fourths of the children have been constantly vaccinated in that neighbourhood during the period above-mentioned. In a subsequent account, he adds, that three-fourths of all the children in the township of Ashton, of Haydock, Newton, Golborne, and Lawton, have been vaccinated. The population of all these townships taken together, he estimates at about 7000.

In St. Helen's and its vicinity, the practice has been carried to a great extent; not less than 6000 have been vaccinated there, of which number, 3000 of all ages under sixty years, were vaccinated by the Rev. W. Finch, minister of St. Helen's chapel; and the remainder by Mr. Churton, and the other professional gentlemen of that town. Mr. Finch is entitled to great praise for introducing the practice into that populous part of the county, and for his zealous exertions to extend its utility.

Vaccination was introduced into Wigan in the year 1801, and in the following year, became general there. According to the testimony of Dr. Caunce, about 400 have been annually vaccinated; so that the whole number vaccinated in Wigan and its vicinity, cannot be estimated at less than 1600.

The whole number vaccinated at Preston, is estimated, by Dr. Robinson, at upwards of 3000.

From Ormskirk I have received no return: but I have grounds enongh to believe that not more than five hundred have been vaccinated there.

The whole number is as follows:

Liverpool and its vicinity	7280
Prescot and its vicinity	3000
Warrington and its vicinity	4000
St. Helens and its vicinity	6000
Wigan and its vicinity	1600
Preston and its vicinity	3000
Ormskirk	500
Total vaccinated, independently of those vacinated at Ashton, the number of which cannot be ascertained,	25,380

Question

Question II. Have Variolous eruptions occurred in any case after Vaccination;—if so, under what circumstances did they occur?

In the course of my enquiries, some instances were mentioned to me, of Variola having occurred after Vaccination, in Liverpool. One of these was thought to be of the spurious kind.

The second case was, that of a boy, two years old, vaccinated by Mr. M'Culloch, surgeon, on the 3d of July, 1801: and the impression on his mind was, that the disease went regularly through its different stages; but he does not distinctly recollect the circumstances of the case, and he took no minutes of it. In April 1804, this boy caught the distinct Small-pox by infection: he had about forty large distinct pustules on different parts of the body. Mr. M'Culloch did not himself inoculate with matter from the patient, to ascertain that the disease was the Small-pox; but matter taken from this boy by another gentleman, produced, on inoculation, the distinct Small-pox. Mr. M'Culloch informs me that he has seen this child very lately; and that the mark left in the arm from Vaccination, is very indistinct.

The father of the child informed Mr. M'Culloch, that he believes the Cow-pox was at its height about the ninth day.

The third case.—A girl, aged five years, was inoculated with fresh vaccine fluid on the 4th of February, 1803, by Mr. Fleetwood, surgeon. It is uncertain at what period the constitutional affection took place. Mr. Fleetwood thinks that the fever came

on about the fifth day, but he is not certain, as he cannot distinctly recollect the facts at this distance of time. The idea he formed at the time, was, that the disease was perfectly regular. On this subject, no satisfactory information can be obtained from the mother of the child. She, however, recollects that the arm was much inflamed, and that the child was very feverish about the time that this inflammation appeared: a considerable mark was left on the arm. On the 1st of July, 1805, Mr. Fleetwood was called to see this patient, when he found her labouring under the confluent Small-pox, received by infection. She passed through the Small-pox, but died about a month afterwards.

The fourth case—occurred to Mr. Hensman, surgeon. In March 1803, he inoculated a girl, about six weeks old, with fresh Vaccine fluid taken on the eighth day. She had the constitutional affection; but he does not recollect the period when this affection took place. The vesicle had the usual appearance; the scab came off in the usual manner, and left a cicatrix, which still remains*. On the 27th of November, 1805, this child took the Small-pox by infection. It was of the distinct kind, and very mild. She had from eighty to one hundred pustules on different parts of the body. Mr. Hensman did not inoculate any person from this child. It is proper to mention that Mr. Hensman had previously vaccinated about two hundred children at the Dispensary, and was acquainted with the phenomena of both the true and the spurious Cow-pox.

* I have been informed, that a child was vaccinated with matter taken from this patient by a person not of the medical profession: and that it afterwards took the Small-pox.

Another

Another case has been mentioned to me by my friend Dr. M'Cartney, the circumstances of which cannot be ascertained. Three children in one family were vaccinated, about four years ago, by a practitioner who has left the town. One of these children lately died of the worst kind of confluent Small-pox. As soon as the disease was discovered, the other two children were vaccinated by Dr. M'Cartney, and they both escaped the infection.

At Prescot, two unsuccessful cases are said to have occurred. One of these, to use the words of Mr. Myers's Letter, "appears unequivocally to have been a case of Chicken-pock." "The other child died of Small-pox twelve months after having been inoculated with the Cow-pox virus by the late Mr. Jackson. It seems he never saw the patient afterwards. The mother says, that there was a pock on each arm, attended with much inflammation; but how soon the inflammation came on, she has no recollection." Mr. Myers afterwards adds, that no medical man saw this child after it was vaccinated, so that it is impossible now to say, whether it had the real Cow-pox or not.

Mr. Kendrick informs me, that the number of cases which he has had occasion to see at Warrington, "in which Variolous eruptions have succeeded the insertion of Vaccine virus in the arm, is sixteen. Of this number, fourteen were beyond all contradiction spurious." Of the history of the two remaining cases, the following is an outline:

S. C.

S. C. aged nine months, was vaccinated in February 1800. Mr. Kendrick saw the child on the ninth day. The vesicle was of the usual form, depressed in the center, and elevated at the circumference, and had not arrived at its height until the day before. The areola was fully formed; and the mother thought the child had appeared a little feverish during the night. Believing that the disease was perfectly regular, Mr. Kendrick inoculated another child with fluid taken from this patient,—but it failed. The propriety of taking the matter previously to the formation of the areola, had not then been insisted upon. The vesicle dried away in the usual manner, and left a permanent cicatrix.

During the latter end of May following, some instances of spurious Cow-pock occurred, (in Warrington) which were followed by Variolous eruptions on the patients being exposed to infection. Much alarm having been excited on this account, Mr. K. was induced to inoculate with Variolous matter a considerable number of children who had been previously vaccinated; but he did not, in any instance, succeed in producing a single symptom of the Variolous disease. Amongst others, he inoculated on the 10th of June, the above-mentioned patient, with Variolous matter. On the fourth day, the arm was a little inflamed round the puncture;—fifth day, inflammation a little increased;—sixth day, inflammation still increasing, and a *very* small quantity of pus—formed; seventh day, inflammation decreasing;—ninth day, inflammation nearly gone. No fever or eruption ever appeared. The child had not then been exposed to infection after its Vaccination. In January following, the Small-pox raged with great violence in that part of the town where this child lived, and it was then repeatedly and fully exposed to infection. On

the

the 14th of that month, Mr. Kendrick was requested to see the child in consequence of an eruption which had appeared upon it. He was informed that, on the ninth and tenth, the child had been extremely feverish and restless; and that on the evening of the tenth, an eruption had appeared on different parts of the body, resembling the distinct Small-pox. The pustules had continued to increase, and were then increasing in size. They were not fully maturated until the eighteenth. Mr. Kendrick had not an opportunity of inoculating any person from this child.

The other case was that of a child, who was inoculated with Vaccine virus, but who was not seen till after the scab had formed. From the mother's account, a greater degree of inflammation, and a higher fever took place than is usual from Vaccination. The pustule, according to Mr. K. was not fully formed till the eighth day. Eleven months afterwards, the child took the Small-pox. Mr. Kendrick saw it the day before its death; and the arms were so covered with pustules, as to preclude all possibility of discovering whether any loss of substance had been occasioned by Vaccination. It is proper to add, that the mother is persuaded that the appearance of the arm during the progress of the disease, was very different from that of a child she has since had vaccinated.

In answer to Question II, Mr. Watkinson, of Ashton, says, that "several instances have occurred of Variolous eruptions after Vaccination, and a few persons died in consequence of them; but the subjects of these cases were, for the most part, vaccinated by people (country-people, and parents inoculating their own children) totally ignorant of the characteristic

istic appearances of the disease, and who were likewise unacquainted with the proper time of taking the virus." In his own practice, he has met with but one instance of Variolous eruption after Vaccination. It occurred in a family exposed to Variolous contagion, in which two children took the Small-pox, "one of whom had gone regularly through the Vaccine disease a few months before: this had only about forty pustules upon the body, and was very little indisposed: the pustules filled, and dried, on the fifth and sixth day." The other child had the confluent Small-pox. I thought it necessary to make a particular enquiry into the circumstances of this case; and in a second letter, Mr. Watkinson was kind enough to favour me with the following history of it:

On the 4th of May, 1804, he vaccinated "Ellen and Sarah Talbot, of Ashton; the first, four years old, the latter, two years, with virus preserved only a few days on lancets, and taken on the eighth day. Ellen did not take the infection; but the punctures on both arms of Sarah began to rise on the fourth and fifth day, and on the twelfth day, the efflorescence around them was become very extensive indeed, so as to alarm the mother. She had no evident indisposition; but the vesicles dried up into dark-coloured scabs, without producing any ulceration in either arm, and occasioned very large distinct marks, which continued so till her death, about a year afterwards. In January, 1805, these two children were exposed to Small-pox contagion; and in a short time both became indisposed, and soon after broke out with eruptions, which were said to be the Small-pox." Mr. Watkinson then went to see them, and "found Sarah in good spirits and appetite, with about forty *small* pustules

tules upon her: they had been out four days: some were scabbing, and some still with a little pus on them." Mr. Watkinson, at first, thought that Sarah's complaint was the Chicken-pox, but on seeing the other girl full of the confluent Small-pox, and very ill, he changed his opinion, and concluded, that Sarah's disease was the Small-pox, which had not been prevented, but had been greatly ameliorated, by previous Vaccination. This conclusion appears to be very probable, and receives considerable support from the last very able report of the Royal Jennerian Society. If it be true, that in almost all the cases in which Variola has occurred after Vaccination, the Variola has been very mild, as it must unquestionably have been in the instances which have fallen under the notice of the very respectable gentlemen who have signed that report, it is a most important fact in the history of Vaccination; and will tend to obviate any objection which may be urged against Vaccination, from the uncertainty with which it has in a few instances been attended.

The following are the answers which I received from St. Helen's, to the present question.

Mr. Churton says, "In answer to your second question, I have to observe, that, in a few instances, Variolous eruptions have occurred after Vaccination, but, on minute enquiry, I always found the vaccinated patients had not gone through the disease in the regular manner described by Dr. Jenner."

The aggregate of the number vaccinated by Mr. Finch, is not to be confined to the neighbourhood of St. Helen's, for some of his patients lived at the distance of ten, twenty, or thirty miles from it. In answer to the question, he says, "Variolous eruptions have not occurred, in any case, as far as relates to my own experience. Of those at a distance, I can give no information, having heard nothing of them since they were vaccinated."

On this subject, Dr. Caunce of Wigan, replies, "that, it has been said, a few instances of Variolous eruptions after Vaccination have occurred near Standish, where unprofessional men have been employed; but the cases are not deserving of much credit."

At Preston, some unsuccessful cases occurred on the first introduction of Vaccination. Dr. Robinson's account of these cases is as follows: "Vaccination was first practised in this town (Preston), by one or two gentlemen, in the year 1798 or 1799, soon after its introduction by Dr. Jenner. A few children only were inoculated at that time, but they were supposed to have gone through the disease in the regular way. The practice afterwards became more general, until the Small-pox raged epidemically. It was then observed that many of the children who had been previously vaccinated, and were supposed to be secure, caught the complaint;—some of whom died, and others recovered with difficulty. The frequent occurrence of these untoward events alarmed the public mind, and prejudiced the vulgar against the practice so entirely, that for a time it was nearly laid aside, except among the more enlightened. The causes of these failures have since been

been explained; and from the increased number of patients vaccinated during the last two years, it is evident, that the alarm is subsiding, and I trust that, ere long, full confidence will be reposed in the practice."

The causes to which Dr. R. ascribes these failures, and which have no doubt produced similar effects in other situations, are the following: "The children were inoculated when the practice was in its infancy: the disease had never been seen by the inoculators: the characteristic marks of the true Cow-pox, its form and colour, the progress of the disease, and the action of the Vaccine virus on the constitution, were not known: the properest time for taking the fluid was not ascertained." He further observes, that he has lately conversed with some gentlemen who acknowledge, they have no doubt, from what they now know, that the spurious Cow-pox was produced; aud that matter taken from it, was given to other practitioners, who inoculated with it. He afterwards adds, "I have not heard of a single unfavourable case for the last three years, although the Small-pox appeared rather abundantly in this town and neighbourhood, in the autumn, winter, and spring, of 1804, and 1805, and proved more than usually fatal."

Question III. Has the Small-pox been epidemic, so as to put to the test many of those who have been vaccinated?

From the registers of the Liverpool Dispensary, it appears, that the Small-pox has not been absent from the town during one whole year, since the year 1778, when that Institution was first opened. Within the last five or six months it has

been epidemic and fatal. What proportion of the vaccinated patients may have been exposed to the test of Variolous infection, it is extremely difficult to ascertain. From the reports of my professional brethren, it is certain, that many have been exposed to the test, and have not taken the infection of Small-pox. Some gentlemen have exposed their vaccinated patients to infection from the worst cases of confluent Small-pox, and these patients have remained unhurt. How uncertain soever may be the number of such trials, and the extent to which they may have been carried, sufficient proof has been derived from them, and from the effects of subsequent inoculation with Variolous matter, to re-establish in the minds of all the most respectable practitioners in Liverpool, a firm conviction, that Vaccination secures the human constitution from the infection of the Small-pox, as completely as Variolous inoculation.

In smaller communities, the facts on such a subject can be collected with much less difficulty; and hence the information which I have to communicate on this point from my correspondents, is much more definite and precise.

In Prescot, the practice of Vaccination commenced in the beginning of the year 1800. The medical gentlemen there had at first many prejudices to overcome; but by steadily and peremptorily refusing to inoculate with Variolous matter, they succeeded, even in the first and second year, in persuading great numbers to adopt the new practice. Mr. Myers states, "In 1802, a most malignant Small-pox prevailed both in the town and neighbourhood. It carried off great numbers, and spread a general panic; but in every instance, our vaccinated patients

tients escaped the contagion. This, as might be expected, created a general confidence in the Cow-pox, and our practice, in consequence, very much increased. Two years after this, the Small-pox again appeared, but, this time, we did not escape so well. Two children were said to have taken the disease, who had been inoculated with the Cow-pox matter, and one of them died."—These are the two cases already mentioned in the answer, from Prescot, to the second question. They occasioned some embarrassment to the practitioners there, but it was not of long continuance. Mr. Myers adds, that in January last, a few cases of Small-pox again occurred, but the disease soon disappeared, "no doubt, from the scarcity of subjects susceptible of infection."

Mr. Kendrick informs me, that since the period when Vaccination was first introduced, the Small-pox has been three times epidemic in Warrington. His reply to the second question, contains all that he knows respecting the number of persons who have suffered from the Variolous disease after Vaccination; and he thinks he can confidently say, no other case of that kind has occurred in his neighbourhood.

From Ashton, Mr. Watkinson replies, that "the Small-pox has been several times in the neighbourhood during the above period," (i. e. the period during which Vaccination has been practised there), and that "in very many instances, children, after Vaccination, have been exposed to it, and have resisted the contagion," and "that the progress of Small-pox has always been soon arrested."

Mr. Chur-

Mr. Churton of St. Helen's, says, "In answer to your third question, I have to say, that the Small-pox was last year epidemic in this neighbourhood, and as I had an opportunity of observing its progress, I was very particular in my observations, and had the satisfaction to find, that not one of the vaccinated patients were infected with Variolous eruptions, though some of them lived in the same houses, and, by my desire, slept together."

The following is Mr. Finch's answer to this question: "Since I relinquished the practice, which is five years ago, the Small-pox may be said to have been epidemic amongst us, having been communicated by children brought here, when under the Small-pox disease, but it did not diffuse its baneful influence to any of those who had been my subjects, though they may be said to have been put to the test, by living contiguous to, or associating with, the infectious."

Dr. Caunce says, "The Small-pox has been epidemic once or twice (at Wigan), but I cannot say whether, or not, all those who had been previously inoculated, were exposed to the contagion."

Dr. Robinson informs me, that, during the time when the Small-pox was epidemic at Preston, in the autumn, winter, and spring of 1804-5, as has been already mentioned, "many children who had been vaccinated were unavoidably exposed to the infection; they were allowed to eat with the same spoon, and out of the same dish, with the infected, and even to lie in the same bed, but not a single instance occurred of Small-pox after Vaccination."

Question

Question IV. Have many persons, after Vaccination, been inoculated with Variolous matter, in order to ascertain that they are proof against Variolous infection?

Inoculation with Variolous matter, after Vaccination, has not been practised to any great extent in any part of the district in which these enquiries have been made.

In Liverpool, Mr. Park had vaccinated four hundred and ninety-nine before the commencement of the present year. Of this number, he inoculated twenty or thirty with Variolous matter in the beginning of the practice; but finding that his patients resisted the infection of the Small-pox, he discontinued the practice of subsequent Variolous inoculation, as altogether unnecessary. Mr. Dale has vaccinated six hundred and sixty-three: of this number he inoculated one hundred and fifty with Variolous matter, without producing the Small-pox in a single instance. Many other gentlemen have put a few of their vaccinated patients to the test of Variolous inoculation; and the result has been in every instance, as far as I have learned, exactly similar to the above.

In Prescot, Mr. Myers says, "In a few cases only have the vaccinated patients been inoculated with Variolous matter. But twice has the Small-pox been so extensively epidemic, that, in my opinion, and that of my professional brethren here, irrefragable proof has been given, that Vaccination is a complete security against that loathsome disease."

In the reply of Mr. Kendrick of Warrington, to the second question,

question, it has already been stated, that he inoculated a considerable number of his vaccinated patients with Variolous matter, but that he did not in one instance succeed in producing the Variolous disease.

Mr. Churton of St. Helen's, informs me, that soon after the commencement of Vaccine Inoculation in his neighbourhood, he inoculated a few children with Variolous matter, who had been previously vaccinated,—all of whom stood the test.

Mr. Finch's testimony is equally satisfactory. About three months after he began the practice, he inoculated twenty with Variolous matter in order to ascertain their security. They were the first twenty he had vaccinated, and they proved insusceptible of Variolous infection.

In Ashton, very few have been inoculated with Variolous matter after Vaccination. Mr. Watkinson inoculated a few about five years ago, in all of whom the punctured part inflamed for a few days, but the inflammation disappeared without producing any pustule. In Wigan, Dr. Caunce does not know, that any have been inoculated with Variolous matter after Vaccination.

In Preston, according to Dr. Robinson, " In a very instances, (not exceeding thirty or forty) Variolous matter has been inserted into the arms of vaccinated patients, in order to ascertain their security. In some of these cases, a pustule was observed in the inoculated part, but no constitutional derangement

ment followed: but in the great majority no effect was produced.

This is the whole of the evidence, which I have been able to collect, in answer to the proposed questions. The unfavourable cases are communicated with the permission of the gentlemen to whom they occurred, who, I believe, have not felt their confidence in the advantages of Vaccination at all diminished in consequence of these failures. Upon the whole, the evidence herein stated appears to be highly satisfactory, and affords strong additional proof of the immense value and importance of Vaccine Inoculation.

JOHN RUTTER.

Liverpool, April 30th, 1806.

No. IV.

ABSTRACT OF REPORTS ON VACCINATION, COLLECTED BY DR. BINNS, FROM MEDICAL PRACTITIONERS AT LANCASTER.

INOCULATED for the Cow-pox at the Dispensary,

In 1804	76
In 1805	35

J. Baxendale could not exactly ascertain the number of persons he had vaccinated, but he believed it was about three hundred: none of these persons have since taken the Small-pox.

Dr. Parkinson, in the year 1801, inoculated, with Vaccine matter, one hundred and five children, of different ages, from two months old to ten or twelve years. All of them were affected in the usual way, and none have as yet had the Small-pox, though the disease has more than once prevailed in the neighbourhood.

On examining his book, J. Greenwood found that he had inoculated two hundred and seventy-four patients with the Vaccine virus; and although many of them had since been exposed to Variolous infection, he had heard but of one (a child in Back-lane,) who took the Small-pox. This child, about twelve months after Vaccination, was infected by a sister, and had a very mild disease: the cicatrix on the arm was observed to be smaller than usual.

About twelve of the above number have been re-inoculated with the Variolous virus, but they resisted the infection.

J. Smith has vaccinated four hundred persons. His practice has been uniformly successful in preventing Small-pox. Several of those who were vaccinated had previously taken the Variolous infection, but nothing unpleasant took place from that cause: the inoculated part appeared in some instances to inflame very slowly, but in others the inflammation and expansion of the pustule proceeded as usual.

J. Smith has not inoculated any children with Variolous matter after Vaccination. Many of the persons vaccinated have

have, however, been repeatedly exposed to contagion in places where the natural Small-pox was prevalent and very fatal.

Dr. Cassell's Letter to Dr. Binns.

I HAVE vaccinated above fifty children, one of which has since gone through the Small-pox caught by infection. When this child was inoculated for Cow-pox, I had no reason to think it did not undergo the regular process of Vaccination; at the same time, I will not assert that the disease was genuine. I profess myself a friend to Vaccination, although it should, in some instances, be succeeded by Small-pox, because I think it is clearly proved that the Vaccine poison, when absorbed into the human system, has the power of rendering the poison of Small-pox completely inert for some years; and further experience may prove that it will ultimately resist the action of Variolous infection. In my judgment, experience has not proved that Vaccination has triumphed over Variolation, as many unsuccessful cases have been from time to time published from the minutes of the Vaccine-pox Institution, in the Medical and Chirurgical Review: some of which I think impossible to disprove, particularly that of Sarah Waglin, by Dr. Woodforde of Ansford, and William Rodman, by Mr. Lawrey: —the former caught the casual Cow-pox fourteen years ago, the latter fifteen years ago, and both have lately gone through the process of natural Small-pox."

Extract from Mr. J. A. Brathwait's Letter.

"BETWEEN the eighth of the tenth month (October), 1800, and the first of the second month (February), 1806, I vaccinated from seven to eight hundred persons, who had the Cow-pox

in the most satisfactory manner—except sixteen or seventeen, in whom the inoculation did not take effect—and nine or ten others, gratuitously inoculated, whom I did not see after the insertion of the Vaccine virus, owing either to their negligence, or to their removal from Lancaster immediately afterwards: one of these had the natural Small-pox and died. I accidentally saw the child a few days before the Variolous fever commenced, and assured the mother it was not secured from the Small-pox, as there was not the least appearance of the Vaccine inoculation on the arm.

Many children were safely and effectually vaccinated during dentition. I have not observed, after Vaccination, the occurrence of Scrophula, or of any other disease attributable to the Cow-pox.

If the Vaccine fluid employed, be taken on the seventh, eighth, or ninth day, no disagreeable ulcer remains at the inoculated part, a circumstance that sometimes (indeed I may say frequently) happens from matter taken at a later period.

JOHN AYREY BRATHWAIT.

Lancaster, 29th third month, 1806.

No. V.

REPORT OF THE SURGEONS OF THE VACCINE INSTITUION AT THE PUBLIC DISPENSARY OF EDINBURGH, FOR 1805.

THE surgeons of the Vaccine Institution have much pleasure in reporting to the managers, that the inoculation for the Cow-pox goes on with uninterrupted success.

Since

Since the last general meeting, they have inoculated one thousand six hundred and fifty-eight, being two hundred and twenty-one more than were inoculated during the former year, and making in all five thousand three hundred and seventy-one since the commencement of the Institution in February 1801.

In consequence of some recent publications against Vaccination, particularly asserting that it operates as a preventive of Small-pox only for four years, and that it produces new and dangerous diseases, the surgeons have lately examined personally a great number of those children who were inoculated at this Institution in the beginning of the year 1801, and have found that many of them have within these three months been freely exposed to the contagion of the natural Small-pox in several quarters of the city, where this loathsome disease has unfortunately been very prevalent, without having been infected; and they beg leave particularly to notice, that they have not found one single instance in which obstinate eruptions, or any new and dangerous diseases have been produced, in consequence of the introduction among mankind of this mild preventive of the Small-pox.

WM. FARQUHARSON.
JAS. BOYCE.
ALEX. GILLESPIE.
J. ABERCROMBIE.

No. VI.

EXTRACT FROM A REPORT GIVEN BY THE PHYSICIANS AND SURGEONS OF THE COW-POX INSTITUTION IN DUBLIN.

A. D. 1804,	Patients inoculated,	578
A. D. 1805	- - -	1032

IN every instance, the Cow-pox has preserved its usual mildness, no symptom occurring to excite anxiety for the safety of the patient. Slight symptoms of fever now and then appeared on the eighth or ninth day, and were always relieved by a laxative medicine.

In several cases the inoculated part, from being injured, ran on to ulceration, which was removed by the application of one part of ung. hyd. nit. and two of ung. simp. In a few instances, however, the axillary glands enlarged and suppurated, but healed kindly; an event by no means unfrequent among patients inoculated for Small-pox.

Whenever Vaccine vesicles appeared on any part of the body, they were obviously produced by an accidental application of the virus from the arm.

In some patients, who had caught the infection of Small-pox previously to their inoculation with Cow-pock, the latter appeared to be arrested in its regular progress, and not to have any influence in lessening the violence of the former. One child, on whom the Small-pox appeared on the twelfth, and another, on whom it did not shew itself until the ninth, had a very unexpected recovery. Virus taken from the arm of the last patient, on the eighth day, produced, in several others, the true Cow-pock, unattended by any general eruption. Small-pox may appear at any period of Cow-pock, before the formation of the Areola, previously to which we should not consider our patients secure from Variolous contagion.

In three cases, under the influence of mercury for the cure of lues, the Cow-pock observed its usual course.

Herpetic, and other eruptions of the skin, seem to produce difficulty in communicating the Cow-pock, and occasional deviations in its progress: of course, diseases of the skin should be removed if possible previously to inoculation. Perhaps want of attention to this circumstance may account for many cases of supposed failure.

Children affected with Scrofula, Rickets, and other chronic complaints, have gone through the Cow-pock as if no such diseases were frequent. Delicate children are in general more difficult to be infected, than the healthy and strong, while the latter have more considerable local inflammation.

No consequent disease has been observed imputable to Cow-pock.

No case occurred to excite doubt as to the permanent efficacy of Cow-pock in protecting the system against the Small-pox, either in this Institution, or in the private practice of any of the gentlemen who superintend it, although a most malignant Small-pox raged very generally throughout this city and its neighbourhood during the last summer.

Signed

By the Physicians, JOS. CLARKE, M. D.
JAS. CLEGHORN, M. D.
THOS. EVORY, M. D.

and Surgeons, GEO. STEWART.
RALPH S. OBRE.
SOLOMON RICHARDS.

SAML. B. LABATH, M. D. Secretary.

No. VII.

EXTRACT OF A LETTER FROM MR. J. FARISH, SURGEON TO ADENBROOKE'S HOSPITAL AT CAMBRIDGE.

As far as my own experience goes, I am a warm advocate for the Cow-pock. I have inoculated a great number of persons, and have never yet met with a single instance of one of them

them taking the Small-pox afterwards. The latter disease, however, has not spread much in Cambridge for some years. I inoculated two of my own children for the Cow-pock, and afterwards repeated the operation upon one of them with the Small-pox, but no disease was produced, though the arm did inflame, and spread, for a few days. On another occasion, I inoculated two children, in whom, during twenty days, no appearance of infection took place, when I discovered, that both of them had the *Itch*. Proper means were used to remove this complaint. In a few days afterwards, I was surprised to see the arm of the oldest begin to inflame, so that, in the proper time, the Cow-pock vesication was produced. The parents of the children would not suffer me to repeat the inoculation on the youngest: in about nine months, however, she took the natural Small-pox, and had them severely; and though the other child slept in the same bed with her, during the whole course of the disease, she never was affected by it. It seems to me that the *Itch* suspended the progress of the Cow-pock, and I am mistaken if I have not seen the tooth-rash, &c. produce the same effect. This is also a strong case of the security that Vaccination gives against the Small-pox. I have met with but one case where any disagreeable consequences followed from Vaccination. Three children were inoculated with Vaccine matter which I had from London: two of them had the disease very favourably; the third child, on the decline of the pock, was covered with an eruption of large clear vesicles, exactly resembling the blisters occasioned by hot water. When they were broken, the discharge from them inflamed the skin over which it ran. As the first crop of blisters disappeared, a fresh one came on, which,

like the former, came to maturity, burst, and was succeeded by a fresh crop. This distressing state continued a long time, and produced great itching, and restlessness. Nothing afforded so much relief in the case as the vegeto-mineral water, though mercury, antimony, bark, and various other medicines were tried. The child is now very well, and the complaint has entirely disappeared.

JAMES FARISH.

Cambridge, April 15th, 1806.

No. VIII.

BATH.

THE Small-pox was prevalent and very fatal in Bath during the last summer and autumn. Dr. Robertson, of Paragon buildings, says, in a letter dated 3d October, 1805,

"I have seen some cases of supposed failure of Vaccination, but none that were unequivocal. One was merely the consequence of local irritation. The patient, a girl, who had been vaccinated three years before, had, on one cheek, eight or nine large pustules, but none on any other part of the body. She had nursed and lain with a younger sister during a considerable eruption of the Small-pox, and the affected cheek was that which had been most exposed to it. In another case, the eruption was decidedly the Chicken-pox. On the whole, I may assert, that during the late widely extended epidemic, Vaccination has answered the expectation of its supporters.

"W. R."

No. IX.

No. IX.

YARMOUTH.

DR. Girdlestone observes, " My own children were the first who were vaccinated either in Norfolk or Suffolk. It is highly to the professional reputation of the surgeons in this town, who have practised Vaccination ever since, that not a single case has arisen to disgrace Dr. Jenner's discovery. Under less observing, and less reading practitioners, some parts of a family have, now and then, been deemed secure, where no security existed, as was proved by a second Vaccination. I have seen scabs, &c. which were attributed to the Vaccination, till I pointed out similar eruptions in children during dentition, where no sort of inoculation had been practised. When it is considered how many careless people have inoculated with Vaccine matter, can it be surprising to hear of some unsuccessful cases?

" A medical friend of mine in this town, about seven years ago, vaccinated a child, who passed through the disease in the usual way. A few months after, he inoculated the child with Variolous ichor. The arm inflamed, the child had soreness at the axilla, and, though there were symptoms of a constitutional disorder, the local disease continued, for ten or twelve days, so severe, that two medical men, besides himself, declared that, if this patient had never been vaccinated, they should have thought the incision a security from the Smallpox.

"A few weeks since, my friend again inoculated this child with Variolous ichor. The same degree of inflammation at the arm, and soreness in the axilla, took place, and the inflammation round the incision did not contract into a scab till between the tenth and twelfth day. Many similar experiments made, in this place, on persons rendered unsusceptible of Variolous fever or eruption, tend to prove, that, in particular constitutions, the local disease from Variolous inoculation may continue beyond the usual period."

"T. G."

"*Yarmouth, 20th February,* 1806."

No. X.

EXTRACT FROM A REPORT ON VACCINATION IN NEWCASTLE-UPON-TYNE, BY J. WOOD, M. D.

THE progress of Vaccination, in this town and neighbourhood, has been beyond expectation during the last twelve months, "vires acquirit eundo," and the success of it equal to the most sanguine expectation.

Vaccinated at the Dispensary,

In 1801-2-3 . .	921
1804 . . .	637
1805 . . .	1708

Total 3266 to Dec. 2d, 1805.

I feel

I feel not a little elevated in being able to say, that not one of these 3266 have taken the Small-pox, although it has been raging in every part of this town and neighbourhood for fifteen months past;—the vaccinated children having stood amidst the general wreck, untouched and uninjured. In a village near this town, Swalwell, I am informed by Mr. Anderson, surgeon, that about thirty children have died by the Small-pox; and a lady resident there, has taken pains to make the most accurate inquiries, and has found that every vaccinated child in the village has escaped, though surrounded with the contagion of Small-pox.

See Medical and Physical Journal for Feb. 1806.

No. XI.

EXTRACT OF A LETTER FROM MR. SIMMONS, SURGEON TO THE INFIRMARY AT MANCHESTER.

I HAVE made enquiry among my medical friends here relative to Vaccination, but do not find that any thing new, or particular, has occurred to them on the subject. The practice is first noticed in the Annual Report at the Manchester Infirmary. There

There were vaccinated

From June,	1800, to June,	1801,	470
	1801,	1802,	670
	1802,	1803,	691
	1803,	1804,	1429
	1804,	1805,	1212
		Total	4472

At the Lying-in Hospital in Manchester, the first subject was vaccinated on the 5th of February, 1802, and at the end of the year, 285 cases were recorded on the books. In the year 1803, the number had risen up to 637, in 1804, to 746, in 1805, to 1584, making in the whole 3252. At both Hospitals, then, 7724 persons have been vaccinated since the year 1800, not including the numbers which have offered at the Infirmary since June 1805; and the practice is still extending there, and at the Lying-in Hospital, as I am informed upon sufficient authority.

No. XII.

EXTRACT OF A LETTER FROM JOHN HEYSHAM, M. D. PHYSICIAN AT CARLISLE.

THE Cow-pox was introduced into the counties of Westmorland and Cumberland, by Dr. Thornton, when on a visit to the late Lord Lonsdale, in the autumn of 1800. Since that period, Vaccination has been very general in Carlisle and the neighbourhood,

bourhood, and the practice has been attended with the best effects. For the last three or four years, almost all the children of the opulent, the greatest part of those in the middling ranks, and a very considerable number of those in the inferior classes of society, have been inoculated with Cow-pox matter. Since the first introduction of Vaccination into this city, the natural Small-pox, has occasionally occurred, but has never raged as an epidemic; and the mortality from that disease has been very inconsiderable, compared with what it used to be before the introduction of Vaccination.

Great numbers of the children who were first vaccinated, have since been subjected to the trial of Small-pox inoculation, but I believe that, in Carlisle, no other effect than local inflammation was produced in any of them. My youngest daughter, who was inoculated from a patient sent to Carlisle by Dr. Thornton, in 1800, was inoculated on the 20th of November, 1804, in both arms, with Small-pox matter. Both arms inflamed to a very considerable degree, and the inflammation did not completely disappear till the 7th of December; but local inflammation was the only effect produced, for, in all other respects, she was perfectly well.

An awkward circumstance, however, took place in September, 1804, in a village in this county. Thirteen children, who had been previously vaccinated by a *very inattentive* country practitioner, took the Small-pox, and three of that number unfortunately died. It has been ascertained that the matter made use of on this occasion was in a *purulent state*, but as no medical practitioner had an opportunity of seeing any of these children while under the progress of the supposed Vaccination, all the other circumstances are unknown.

I have

I have only to add, that in this part of the country, I have neither seen, or heard, of any disagreeable eruptions, &c. succeeding Vaccination.

J. H.

Carlisle, 14th May, 1806.

No. XIII.

EXTRACT OF A LETTER FROM JOHN SHELDON, ESQ. F. R. S. PROFESSOR OF ANATOMY TO THE ROYAL ACADEMY.

Exeter, May 28th, 1806.

VACCINATION is in high repute with the medical men at Exeter. I do not know, nor have I heard, of any case of Small-pox occurring after Vaccination here. We have had such reports, but on investigation they proved false: one case, I recollect, was the Chicken-pox. I cured a violent eruption, which occurred after Vaccination and was by some referred to it, by frequently washing the parts affected with a solution of Vitriol of Zinc in water, in the proportion of a grain to an ounce of water, or somewhat more. I believe you will find this an useful application in several cutaneous disorders.

J. S.

No. XIV.

EXTRACT OF A LETTER FROM DR. SALMON.

Reading, June 1, 1806.

THE case of supposed failure in Vaccination, alluded to in your letter, occurred in this town about two months ago. I did not see the child till two days after the eruption appeared; but Mr. Bulley, an eminent surgeon here, attended, and gave me the following history of the disease:—The child, about two years ago, had been inoculated when three weeks old, by Mr. Bulley, with Cow-pock matter, and went through the usual stages of that disease in the most perfect manner. On the 14th of March last, the child became indisposed; he was sick and feverish, and, on the following day, an eruption of red pimples appeared on the face, varying in size from that of a pin's head to that of a common garden pea; and these continued to come out on different parts of the body, for three days at least. On the fourth day, the pustules on the face appeared full of yellow serum, and on the sixth day most of them were burst and drying off, and, a day or two later, those on the extremities disappeared in the same manner.

A difference of opinion arose as to the nature of this disease. The parents of the child were positive, at first, of its being Small-pox. Mr. Ring, a partner of Mr. Bulley, was rather inclined to the same opinion, and so was Mr. Golding, another surgeon

of this town: but Mr. Bulley, who attended the child from the first, and myself, were firmly of opinion, that the disease was the Chicken-pock. I need not detail the grounds of our opinion, for you will observe, that in its commencement, progress, and termination, it was altogether unlike Small-pox; and the appearance of the pustules, on which some stress was laid by those who thought differently, never conveyed to my mind the idea of Small-pox. With a view to decide the question, matter was taken from this child, and inserted into the arms of three children who had never had Small-pox or Cow-pock. The arms of these children inflamed and suppurated, and in two of them an eruption ensued, which in every respect followed the course of the original disease. These children were frequently inspected by all the surgeons in the town, except one; and they are unanimous in the opinion, that the disease was not Small-pox, but Chicken-pock. But since the receipt of your letter, another experiment has been made on two of the children, who have been inoculated, by Mr. Golding, with active Variolous matter. The arms of both inflamed, and, till the 6th day, threatened to go on to suppuration; but the inflammation then subsided, and, in a day or two, entirely disappeared. The result of this last experiment has affected the minds of some with a degree of doubt as to the previous disease, but my opinion remains unshaken.

I have the pleasure to say, that Vaccination has been very generally and successfully practised in this town and neighbourhood; and I have no doubt it will continue to be practised, unless some proof more decisive of its inefficacy occurs, than the case above related.

No. XV.

No. XV.

EXTRACT OF A LETTER FROM DR. BEST.

York, June 9th, 1806.

VACCINE inoculation is recommended and practised by all the medical fraternity of York, and is approved of and submitted to by *almost* all the upper and middling classes of society; but, among the lower classes, the prejudice against both the Vaccine and Variolous inoculation, still continues very strong. The casual Small-pox has, in consequence, been very prevalent and destructive, the whole winter and spring, and more particularly during the last month.

Since the first introduction of Cow-pox, a few cases have been mentioned of Small-pox occurring subsequent to the Vaccine disease; but in no one of these instances has it been ascertained, that the part inoculated with Vaccine matter had gone regularly through its different stages.

CHARLES BEST.

Postscript by Henry Tuke, Esq.

I HAVE made some enquiries, the answers to which confirm pretty much the statement given by Dr. Best. I have, however, the satisfaction to add, that the Vaccine inoculation increases in its reputation among all classes; and I hope, in time, it will become general. The natural Small-pox is, at present, very prevalent, and in many instances mortal. For want of matter, inoculation is at present nearly at a stand, but a supply is expected soon. Vaccine Inoculation is performed gratis, at the Dispensary, to the poor; but I do not find that many have applied. However, I believe, the cause is gaining ground, and I

hope some further exertions will be made, than have already been, to promote so desirable an object.

York, 10th of Sixth Month, 1806.

No. XVI.

EXTRACT OF A LETTER FROM R. BEVAN, M. D. PHYSICIAN AT MONMOUTH.

June 26, 1806.

THE report concerning which you enquire, seems to have been founded on the following circumstances:—A surgeon, in the neighbourhood of Monmouth, being dissatisfied with the appearance produced by Vaccine inoculation in two of his patients, recommended inoculation for the Small-pox. The disease, as he expected, was received, and went through it's course regularly. Similar accidents will no doubt be met with in many parts of this country, and when examined partially with the eye of prejudice, might be made to weigh against the inoculation for the Cow-pox. But now, that a more accurate knowledge of the disease is very generally diffused, such cases are not likely to happen again; and no failure of any other description can I discover, after a minute enquiry. Not one instance has occurred to any surgeon, in my knowledge, where (when they were satisfied of the genuineness of the disease) the Small-pox has appeared after Vaccination.

I may add to the above statement, that a patriotic lady, a few miles from Monmouth, who received her instruction in Vaccination from Dr. Jenner, has inoculated above 1600 patients.

tients in the last five years, without a single failure. The scene of her practice has been frequently visited in the course of that period by the natural Small-pox, and her patients have been freely exposed to it, but not one of them was ever attacked by the complaint.

R. B.

No. XVII.

EXTRACT OF A LETTER FROM DR. FOWLER, PHYSICIAN AT SALISBURY.

Dated Sarum, 3d July, 1806.

THE Vaccine practice has been very generally adopted in this neighbourhood, and I have not heard of any well authenticated case of its failure. It is entirely in the hands of surgeons and apothecaries; I have, therefore, very little personal experience relative to it, but all that I have had, is in its favour. Mr. Coates, one of the surgeons to our Infirmary, took the trouble, about a quarter of a year ago, to collect the written opinions of all the medical men, within twenty or thirty miles of this place, respecting the Cow-pock. They are uniformly favourable, and he permits me to say, they shall be sent for your perusal, if you have the slightest wish to see them.

N. F.

No. XVIII.

EXTRACT OF A LETTER FROM P. M. MARTINEAU, ESQ. TO MR. CHARLES MURRAY.

Norwich, July 21, 1806.

BY the higher and middling ranks of people here, the Cow-pock is almost universally preferred to Variolous inoculation; so that in my own practice, I have not been obliged to employ the latter more than twice or three times, for some years past. Since last summer, when a general Vaccine inoculation was attempted, very little progress has been made among the lower ranks of the people; and I fear nothing will induce them to do it, or the higher classes to recommend it, without the immediate apprehension of Small-pox contagion. At the time of the general inoculation, many reports were circulated of the inefficacy of the Cow-pox in preventing the Small-pox; but on close investigation, we were none of us, I believe, able to detect a single case in which Small-pox had supervened to Vaccination; and I assure you, Sir, my medical brethren were very attentive in examining every case of supposed failure. Could any thing have forced conviction on the minds of the people, one would have thought the state of the Small-pox, and of Vaccination, at that time, in the city, would have done it: for the reported failures occurred in cases where the Cow-pock had *not taken*; while none of the persons in whom the Vaccination had proceeded regularly, were affected with the Small-pox, though much exposed to contagion. —But more, Sir, is not necessary: if men are not now satisfied, neither will they, though one rose from the dead to convince them.